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Compilation of Current High Energy Physics Experiments

C.G. Wohl, R.L. Kelly, F.E. Armstrong, C.P. Horne, M.S. Hutchinson,
A. Rittenberg, T.G. Trippe, G.P. Yost (Berkeley Particle Data Group)
Lawrence Berkeley Laboratory
Berkeley, California 94720 USA

L. Addis, A. Odian, G.M. Row
Stanford Linear Accelerator Center
Stanford, California 94305 USA

C.E.W. Ward
Argonne National Laboratory
Argonne, Illinois 60439 USA

P. Wanderer
Brookhaven National Laboratory
Upton, New York 11973 USA

R. Armenteros
CERN
Ch-1211 Geneva 23, Switzerland

P. Joos
DESY
Notkestieg 1
D-2 Hamburg-52, Germany

T.H. Groves
Fermilab
P.O. Box 500
Batavia, Illinois 60510 USA

Y. Oyanagi
University of Tsukuba
Sakura-mura, Niihari-gun
Ibaraki 300-31, Japan

G.T.J. Arnison
Rutherford High Energy Laboratory
Chilton, Didcot, Oxon. OX11 0QX, England

Yu. Antipov, N. Barinov
Institute for High Energy Physics
Serpukhov, Protvino
Moscow Region, USSR

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Introduction

This is the second edition of our compilation of current high energy physics experiments [1]. It is a collaborative effort of the Berkeley Particle Data Group, the SLAC library, and the nine participating laboratories: Argonne (ANL), Brookhaven (BNL), CERN, DESY, Fermilab (FNAL), KEK, Rutherford (RHEL), Serpukhov (SERP), and SLAC. KEK and Serpukhov are new to this edition.

Nominally, the compilation includes summaries of all high energy physics experiments at the above laboratories that (1) were approved (and not subsequently withdrawn) before about June 1978, and (2) had not completed taking of data by 1 January 1975. In fact there are a handful of omissions, nearly all of them experiments that completed running in 1975. We emphasize that only approved experiments are included.

The experimental summaries themselves are on the microfiche in the pocket at the front of the report. An example from these summaries, with some explanatory notes, follows this introduction. The rest of the report consists of three indices to the compilation, several "vocabulary lists" giving names or abbreviations used, and a short summary of the beams at each of the laboratories (excepting Rutherford). The first index points to experiments by initial-state particles and beam momentum, in order of increasing particle mass and beam momentum. The second index points to experiments that aim at determining properties of individual particles, listed by particle. The third index lists experiments by spokesman. The vocabularies list names or define abbreviations for accelerators, experimental detectors, kinematic variables such as momentum, reaction-data descriptors such as cross section, particle-property descriptors such as mass, institutions, and particles.

Anyone wanting more information about a particular experiment should contact the experiment's spokesman directly, not us. Although the original experimental proposals are sometimes available in libraries, there are often subsequent letters, revisions, and addenda, or simply informal arrangements with the powers that be, that extend the aims or shift the emphasis of an experiment. There are also often changes of collaborators on an experiment.

We try to keep up with such changes, but of course cannot entirely succeed. The spokesman is the authoritative source for information about an experiment.

We invite comments pointing out omissions, obscurities, out-of-date information, and outright errors. There are no doubt a number of each. Comments should be sent to:

Particle Data Group
Attn: PROPOSALS
Lawrence Berkeley Laboratory
Berkeley, CA 94720
USA

Requests for copies from the Americas, Australasia, and the Far East should go to the above address, while those from other areas should go to:

Cern Scientific Information Service
Ch-1211 Geneva 23
Switzerland

The Berkeley Particle Data Center is jointly supported by the General Science and Basic Research Division (High Energy Physics) of the US Department of Energy, The Office of Standard Reference Data of the National Bureau of Standards, and the National Science Foundation.

[1] R.L. Kelly et al., Compilation of Current High Energy Physics Experiments, Lawrence Berkeley Laboratory Report LBL-91 (July 1976).

EXAMPLE FROM THE MICROFICHE

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ANL-E-426 (14 JAN 1977); APPROVED 27 JAN 1977; STARTED AUG 1977.

PROPOSAL TO MEASURE 90-DEG C.M. PROTON-PROTON ELASTIC SCATTERING IN PURE INITIAL SPIN STATES
  FROM 2 TO 6 GEV/C

MICH -- K.ABE, R.C.FERNOW, A.D.KRISCH(SPOKESPERSON), T.A.MULERA, A.J.SALTHOUSE, B.SANDLER,
        K.M.TERWILLIGER
ANL  -- P.F.SCHULTZ, L.G.RATNER, J.R.O'FALLON
OXF  -- D.G.CRABB
NORD -- H.E.MIETTINEN
ABAO -- A.LIN

    ACCELERATOR=ANL; DETECTOR=DAS

    POLARIZED BEAM AND TARGET
    P P --> 2P                          2-6 GEV (PLAB)                  POL

    <DATA COMMENT> MEASURES DIFFERENCE BETWEEN CROSS SECTIONS FOR INITIAL SPINS PARALLEL AND
      ANTI-PARALLEL, THE SPINS BEING ORIENTED PERPENDICULAR TO THE SCATTERING PLANE
    <EXPERIMENTAL COMMENT> USES APPARATUS OF ANL-E-421. APPROVED FOR 100 SHIFTS.

**********************************************************************************

ANL-E-427 (17 JAN 1977); APPROVED 27 JAN 1977.

PROPOSAL TO STUDY EXCLUSIVE LAMBDA-PRODUCTION REACTIONS WITH THE ZGS POLARIZED PROTON BEAM

ANL  -- I.AMBATS, D.AYRES(SPOKESPERSON), D.COHEN, R.DIEBOLD, E.MAY, A.SNYDER, C.WARD,
        A.WICKLUND
ELMT,CHIC -- E.SWALLOW

    ACCELERATOR=ANL; DETECTOR=COMB

    POLARIZED BEAM
    P P --> P LAMBDA K+             6, 12 GEV (PLAB)            CS,ANGP,ANG,
                                                                POL,ASYM
    P N --> N LAMBDA K+             ''                          ''
    P N --> P LAMBDA K0             ''                          ''

    N(UNSPEC)+          EX,MASS,W,QN

    <DATA COMMENT> THE LAMBDA K0 P SAMPLE WILL BE MUCH SMALLER THAN THE OTHERS AND ONLY AT 12
      GEV/C
    <EXPERIMENTAL COMMENT> APPROVED FOR 180 SHIFTS. SCHEDULED TO START MAR 78.

**********************************************************************************

ANL-E-428 (17 JAN 1977); APPROVED 27 JAN 1977; STARTED JUN 19TT; COMPLETED 28 JUL 1977.

STUDY OF MESONS IN OMEGA PI-, OMEGA PI+ PI-, AND (4PI)- CHANNELS

CARL -- K.W.EDWARDS, D.LEGACEY
MCGI -- P.BROCKMAN, J.GAMOSMAN, E.OHANESSIAN, P.M.PATEL
OSU  -- N.R.STANTON
TNTO -- J.BEAUFAYS, J.A.DANKOWYCH, A.J.PAWLICKI, J.D.PRENTICE, T.S.YOON(SPOKESPERSON)

    ACCELERATOR=ANL; DETECTOR=SPEC

    PI- P --> P PI+ PI0 2PI-            8.5 GEV (PLAB)
    PI- P --> P OMEGA PI-               ''
    PI- P --> N 2PI+ PI0 2PI-           ''
    PI- P --> N OMEGA PI+ PI-           ''

    B(1235)-            PW
    G(1680)-            PW
    A2(1310)0           PW
    MESON(UNSPEC)0      EX

    <EXPERIMENTAL COMMENT> RAN FOR 97 SHIFTS. RELATED TO ANL-E-420.

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EXPERIMENT NUMBER, DATE OF PROPOSAL (IN PARENTHESES), AND PROGRESS DATES.

INSTITUTIONS (SEE VOCABULARY FOR ABBREVIATIONS) AND AUTHORS, WITH SPOKESPERSON NOTED.

ACCELERATOR AND DETECTOR (SEE VOCABULARIES).

ADDITIONAL INFORMATION.

TITLE AND/OR DESCRIPTION (THE LATTER IN BRACKETS).

POLARIZATION INFORMATION (IF ANY).

REACTIONS TO BE STUDIED (SEE PARTICLE VOCABULARY), BEAM MOMENTUM OR OTHER KINEMATIC VARIABLE(S) (SEE VOCABULARY), AND REACTION-DATA DESCRIPTORS (SEE VOCABULARY).

PARTICLES AND PARTICLE PROPERTIES TO BE STUDIED (SEE VOCABULARIES).

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
GAMMA E-	?		SLAC-SP-0078
GAMMA P	2.0	19.0	SLAC-E-112
GAMMA P	3.0	7.2	DESY-142
GAMMA P	3.0	7.2	DESY-145
GAMMA P	4.0	7.0	DESY-094
GAMMA P	5.5	6.5	DESY-136
GAMMA P	6.0		SLAC-E-108
GAMMA P	9.0		SLAC-E-108
GAMMA P	10.0	30.0	CERN-WA-004
GAMMA P	10.0	70.0	CERN-WA-004
GAMMA P	10.0	180.0	CERN-WA-001
GAMMA P	12.0		SLAC-E-108
GAMMA P	13.0		SLAC-E-114
GAMMA P	14.0	300.0	FNAL-025A
GAMMA P	15.0		SLAC-E-114
GAMMA P	15.0	35.0	SERP-E-090
GAMMA P	16.0		SLAC-E-114
GAMMA P	17.0		SLAC-E-114
GAMMA P	19.0		SLAC-E-114
GAMMA P	20.0	60.0	FNAL-152B
GAMMA P	21.0		SLAC-E-114
GAMMA P	>21.0		SLAC-E-114
GAMMA P	70.0	140.0	FNAL-516
GAMMA N	3.4	5.0	DESY-129
GAMMA N	15.0		SLAC-E-114
GAMMA N	15.0		SLAC-E-114
GAMMA N	16.0		SLAC-E-114
GAMMA N	17.0		SLAC-E-114
GAMMA N	19.0		SLAC-E-114
GAMMA N	21.0		SLAC-E-114
GAMMA N	>21.0		SLAC-E-114
GAMMA DEUT	2.0	19.0	SLAC-E-112
GAMMA DEUT	14.0	300.0	FNAL-025A
GAMMA BE	2.0	19.0	SLAC-E-112
GAMMA BE	40.0	200.0	FNAL-401
GAMMA C	2.0	19.0	SLAC-E-112
GAMMA C	60.0		FNAL-025A
GAMMA C	170.0		FNAL-025A
GAMMA AL	2.0	19.0	SLAC-E-112
GAMMA CU	2.0	19.0	SLAC-E-112
GAMMA CU	60.0		FNAL-025A
GAMMA CU	170.0		FNAL-025A
GAMMA AG	2.0	19.0	SLAC-E-112
GAMMA PB	2.0	19.0	SLAC-E-112
GAMMA PB	60.0		FNAL-025A
GAMMA PB	170.0		FNAL-025A
GAMMA NUCLEUS	?		CERN-WA-004
GAMMA NUCLEUS	0.	300.0	FNAL-458
GAMMA NUCLEUS	10.0	180.0	CERN-WA-001
GAMMA NUCLEUS	13.0		SLAC-E-114
GAMMA NUCLEUS	15.0		SLAC-E-114
GAMMA NUCLEUS	16.0		SLAC-E-114
GAMMA NUCLEUS	17.0		SLAC-E-114
GAMMA NUCLEUS	19.0		SLAC-E-114
GAMMA NUCLEUS	20.0	60.0	FNAL-152B
GAMMA NUCLEUS	20.0	80.0	CERN-WA-034
GAMMA NUCLEUS	20.0	80.0	CERN-WA-045
GAMMA NUCLEUS	20.0	200.0	FNAL-087A
GAMMA NUCLEUS	21.0		SLAC-E-114
GAMMA NUCLEUS	>21.0		SLAC-E-114
GAMMA NUCLEUS	100.0	300.0	FNAL-087A
MOMENTUM RANGES FOR NEUTRINO AND ANTINEUTRINO BEAMS ARE NOT DEFINED VERY SYSTEMATICALLY.			
NUE E-	0.	260.0	CERN-WA-018
NUE E-	0.	400.0	FNAL-310
NUE E-	5.0	70.0	FNAL-045A
NUE E-	10.0	100.0	FNAL-253
NUE P	0.	150.0	CERN-WA-024
NUE P	0.	430.0	FNAL-310
NUE P	1.0	8.0	BNL-639
NUE P	5.0	70.0	FNAL-045A
NUE N	0.	400.0	FNAL-310
NUE N	1.0	8.0	BNL-639
NUE NUCLEUS	0.	150.0	CERN-WA-014
NUE NUCLEUS	0.	150.0	CERN-WA-015
ANUE E-	0.	230.0	FNAL-594
ANUE E-	0.	260.0	CERN-WA-018
ANUE E-	10.0	100.0	FNAL-253
ANUE P	0.	400.0	FNAL-310
ANUE P	1.0	8.0	BNL-639
ANUE P	5.0	70.0	FNAL-045A
ANUE N	0.	400.0	FNAL-310
ANUE N	1.0	8.0	BNL-639
ANUE NUCLEUS	0.	150.0	CERN-WA-015
NUMU E-	0.	10.0	BNL-629
NUMU E-	0.	12.0	BNL-613
NUMU E-	0.	150.0	CERN-WA-014
NUMU E-	0.	150.0	CERN-WA-021
NUMU E-	0.	230.0	FNAL-594
NUMU E-	0.	260.0	CERN-WA-018
NUMU E-	0.	400.0	FNAL-310
NUNU E-	1.0	5.0	BNL-605
NUMU E-	4.0		BNL-639
NUMU E-	5.0	70.0	FNAL-045A
NUMU E-	10.0		BNL-639
NUMU E-	10.0	100.0	FNAL-253
NUMU P	?		FNAL-247

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
NUMU P	0.	4.0	ANL-E-412
NUMU P	0.	10.0	BNL-427
NUMU P	0.	10.0	BNL-629
NUMU P	0.	12.0	BNL-613
NUMU P	0.	150.0	CERN-WA-021
NUMU P	0.	150.0	CERN-WA-024
NUMU P	0.	150.0	CERN-WA-025
NUMU P	0.	200.0	FNAL-053A
NUMU P	0.	200.0	FNAL-545
NUMU P	0.	260.0	CERN-WA-001
NUMU P	0.	400.0	FNAL-310
NUMU P	1.0	5.0	BNL-605
NUMU P	1.0	8.0	BNL-639
NUMU P	2.0	3.5	BNL-653
NUMU P	3.0	5.0	BNL-693
NUMU P	4.0		BNL-639
NUMU P	4.0	19.0	CERN-T-224
NUMU P	5.0	70.0	FNAL-045A
NUMU P	10.0		BNL-639
NUMU P	10.0	100.0	FNAL-031A
NUMU P	28.0	43.0	FNAL-368
NUMU P	35.0	64.0	FNAL-388
NUMU P	50.0	150.0	FNAL-380
NUMU P	70.0		FNAL-254
NUMU P	91.0	95.0	FNAL-388
NUMU P	131.0	143.0	FNAL-388
NUMU N	0.	3.2	BNL-704
NUMU N	0.	0.4	BNL-706
NUMU N	0.	4.0	ANL-E-412
NUMU N	0.	10.0	BNL-427
NUMU N	0.	10.0	BNL-625
NUMU N	0.	150.0	CERN-WA-025
NUMU N	0.	200.0	FNAL-545
NUMU N	0.	230.0	FNAL-594
NUMU N	0.	400.0	FNAL-310
NUMU N	1.0	5.0	BNL-605
NUMU N	1.0	8.0	BNL-639
NUMU N	2.0	3.5	BNL-693
NUMU N	3.0	5.0	BNL-653
NUMU N	4.0		BNL-639
NUMU N	4.0	19.0	CERN-T-224
NUMU N	10.0		BNL-639
NUMU NUCLEON	0.	150.0	CERN-WA-025
NUMU NUCLEON	0.	200.0	FNAL-545
NUMU DEUT	0.	10.0	BNL-427
NUMU DEUT	0.	260.0	CERN-WA-001
NUMU C12	0.	0.2	BNL-704
NUMU NE	0.	200.0	FNAL-053A
NUMU NE	5.0	155.0	FNAL-028A
NUMU NE	28.0	43.0	FNAL-368
NUMU NE	35.0	64.0	FNAL-388
NUMU NE	50.0	150.0	FNAL-380
NUMU NE	91.0	95.0	FNAL-388
NUMU NE	131.0	143.0	FNAL-389
NUMU FE	0.	260.0	CERN-WA-001
NUMU FE	2.0	30.0	SERP-E-045
NUMU PB	0.	200.0	CERN-WA-044
NUMU PB	0.	430.0	FNAL-310
NUMU NUCLEUS	?		FNAL-556
NUMU NUCLEUS	0.	150.0	CERN-WA-014
NUMU NUCLEUS	0.	150.0	CERN-WA-017
NUMU NUCLEUS	0.	200.0	FNAL-536
NUMU NUCLEUS	0.	200.0	FNAL-545
NUMU NUCLEUS	0.	230.0	FNAL-594
NUMU NUCLEUS	0.	240.0	CERN-WA-016
NUMU NUCLEUS	0.	260.0	CERN-WA-018
NUMU NUCLEUS	4.0	19.0	CERN-T-245
NUMU NUCLEUS	5.0	20.0	SERP-E-111
NUMU NUCLEUS	10.0	22.0	SERP-E-107
NUMU NUCLEUS	10.0	100.0	FNAL-001A
NUMU NUCLEUS	10.0	100.0	FNAL-521
NUMU NUCLEUS	10.0	100.0	FNAL-564
NUMU NUCLEUS	22.0		CERN-WA-023
NUMU NUCLEUS	40.0	300.0	FNAL-021A
NUMU NUCLEUS	56.0		CERN-WA-025
NUMU NUCLEUS	>60.0		FNAL-553
NUMU NUCLEUS	>100.0		FNAL-482
NUMU NUCLEUS	275.0		CERN-WA-019
NUMU NUCLEUS	300.0		FNAL-021A
NUMU	?		FNAL-556
ANUMU E-	0.	150.0	CERN-WA-015
ANUMU E-	0.	200.0	FNAL-180
ANUMU E-	0.	200.0	FNAL-542
ANUMU E-	0.	230.0	FNAL-564
ANUMU E-	0.	260.0	CERN-WA-018
ANUMU E-	0.	400.0	FNAL-310
ANUMU E-	1.0	5.0	BNL-605
ANUMU E-	4.0		BNL-639
ANUMU E-	10.0		BNL-639
ANUMU E-	10.0	100.0	FNAL-253
ANUMU P	0.	5.0	BNL-532
ANUMU P	0.	100.0	FNAL-031A
ANUMU P	0.	130.0	FNAL-172
ANUMU P	0.	150.0	CERN-WA-021
ANUMU P	0.	150.0	CERN-WA-024
ANUMU P	0.	150.0	CERN-WA-025
ANUMU P	0.	200.0	FNAL-180
ANUMU P	0.	200.0	FNAL-542

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
ANUMU P	0.	230.0	FNAL-596
ANUMU P	0.	260.0	CERN-WA-001
ANUMU P	0.	400.0	FNAL-310
ANUMU P	1.0	8.0	BNL-639
ANUMU P	4.0		BNL-639
ANUMU P	4.0	19.0	CERN-T-224
ANUMU P	13.0		BNL-639
ANUMU P	28.0	42.0	FNA -388
ANUMU P	35.0	64.0	FNAL-389
ANUMU P	50.0	150.0	FNAL-380
ANUMU P	91.0	95.0	FNAL-388
ANUMU P	131.0	145.0	FNAL-389
ANUMU N	0.	130.0	FNAL-172
ANUMU N	0.	150.0	CERN-WA-025
ANUMU N	0.	200.0	FNAL-180
ANUMU N	0.	200.0	FNAL-542
ANUMU N	0.	400.0	FNAL-310
ANUMU N	1.0	8.0	BNL-639
ANUMU N	4.0		BNL-639
ANUMU N	4.0	19.0	CERN-T-224
ANUMU N	13.0		BNL-639
ANUMU NUCLEON	0.	150.0	CERN-WA-025
ANUMU DEUT	0.	260.0	CERN-WA-001
ANUMU NE	0.	130.0	FNAL-172
ANUMU NE	0.	200.0	FNAL-180
ANUMU NE	28.0	43.0	FNAL-388
ANUMU NE	35.0	64.0	FNAL-388
ANUMU NE	50.0	150.0	FNAL-380
ANUMU NE	91.0	95.0	FNAL-388
ANUMU NE	131.0	143.0	FNAL-388
ANUMU FE	0.	260.0	CERN-WA-001
ANUMU FE	0.	260.0	CERN-WA-018
ANUMU FE	2.0	30.0	SERP-E-045
ANUMU NUCLEUS	?		FNAL-546
ANUMU NUCLEUS	0.	150.0	CERN-WA-015
ANUMU NUCLEUS	0.	200.0	FNAL-536
ANUMU NUCLEUS	0.	230.0	FNAL-594
ANUMU NUCLEUS	0.	260.0	CERN-WA-018
ANUMU NUCLEUS	5.0	20.0	SERP-E-111
ANUMU NUCLEUS	10.0	20.0	SERP-E-137
ANUMU NUCLEUS	10.0	130.0	FNAL-001A
ANUMU NUCLEUS	10.0	120.0	FNAL-531
ANUMU NUCLEUS	10.0	100.0	FNAL-564
ANUMU NUCLEUS	22.0		CERN-WA-023
ANUMU NUCLEUS	30.0	240.0	CERN-WA-036
ANUMU NUCLEUS	40.0	300.0	FNAL-021A
ANUMU NUCLEUS	56.0		CERN-WA-023
ANUMU NUCLEUS	>60.0		FNAL-553
ANUMU NUCLEUS	>100.0		FNAL-482
ANUMU NUCLEUS	200.0		CERN-WA-019
ANUMU	?		BNL-652
ANUMU	?		FNAL-356
E- P	?		SLAC-E-122
E- P	?		SLAC-E-133
E- P	2.5		DESY-137
E- P	2.6	3.5	DESY-126
E- P	2.5	6.7	DESY-114
E- P	3.0		DESY-141
E- P	3.7		DESY-137
E- P	4.7		DESY-137
E- P	5.0		DESY-141
E- P	6.0		DESY-125
E- P	6.0		DESY-141
E- P	6.6	29.0	SLAC-E-080
E- P	6.4		DESY-137
E- P	6.7	7.0	DESY-137
E- P	7.0		DESY-141
E- P	12.9		SLAC-E-095
E- P	17.7		SLAC-E-095
E- P	19.3		SLAC-E-095
E- P	22.0		SLAC-E-130
E- N	?		SLAC-E-133
E- DEUT	?		SLAC-E-133
E- DEUT	3.0		DESY-141
E- DEUT	5.0		DESY-141
E- DEUT	6.0		DESY-141
E- DEUT	7.0		DESY-141
E- DEUT	22.0		SLAC-E-130
E- HE3	2.0	17.0	SLAC-E-121
E- HE	2.0	17.0	SLAC-E-121
E- BE	3.0		DESY-141
E- BE	5.0		DESY-141
E- BE	6.0		DESY-141
E- BE	7.0		DESY-141
E- SI	3.0		DESY-141
E- SI	5.0		DESY-141
E- SI	6.0		DESY-141
E- SI	7.0		DESY-141
E- WT	40.0	300.0	FNAL-510
E- PB	40.0	300.0	FNAL-510
E- PB	>100.0		FNAL-340
E- NUCLEUS	>100.0		FNAL-359
E-	>200.0		FNAL-456

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
FOR E^+E^- COLLIDING BEAM EXPERIMENTS, WE GIVE THE CENTER-OF-MASS (* LAB) MOMENTUM RATHER THAN THE EQUIVALENT LAB MOMENTUM FOR SCATTERING ON A STATIONARY TARGET.			
E+ E-	?		DESY-138
E+ E-	?		SLAC-SP-007A
E+ E-	?		SLAC-SP-007B
E+ E-	?		SLAC-SP-025
E+ E-	?		SLAC-SP-026
E+ E-	1.0	1.5	DESY-119
E+ E-	1.5	3.0	SLAC-SP-028
E+ E-	1.5	4.0	SLAC-SP-029
E+ E-	1.5	4.2	SLAC-SP-024
E+ E-	1.5	4.3	DESY-144
E+ E-	1.6		SLAC-SP-027
E+ E-	>1.6		DESY-138
E+ E-	1.8	2.8	DESY-143
E+ E-	1.8		DESY-143
E+ E-	1.9		SLAC-SP-027
E+ E-	1.9	2.5	DESY-139
E+ E-	1.9	4.3	DESY-140
E+ E-	2.6		SLAC-SP-010
E+ E-	2.6	4.3	SLAC-SP-017
E+ E-	3.8		SLAC-SP-010
E+ E-	3.8		SLAC-SP-014
E+ E-	3.8		SLAC-SP-019
E+ E-	4.0	5.0	DESY-146
E+ E-	4.0	18.0	SLAC-PEP-002
E+ E-	4.0	16.0	SLAC-PEP-004
E+ E-	4.0	18.0	SLAC-PEP-005
E+ E-	4.0	18.0	SLAC-PEP-006
E+ E-	4.0	18.0	SLAC-PEP-009
E+ E-	4.0	18.0	SLAC-PEP-012
E+ E-	4.0	18.0	SLAC-PEP-014
E+ E-	4.0		SLAC-SP-016
E+ E-	4.7		DESY-147
E+ E-	5.0	15.0	DESY-PETRA-CELLO
E+ E-	5.0	15.0	DESY-PETRA-JADE
E+ E-	5.0	15.0	DESY-PETRA-MARKJ
E+ E-	5.0	15.0	DESY-PETRA-PLUTO
E+ E-	5.0	15.0	DESY-PETRA-TASSO
MU- P	100.0		FNAL-098
MU- P	100.0	250.0	CERN-NA-002
MU- P	100.0	250.0	CERN-NA-004
MU- P	100.0	250.0	CERN-NA-009
MU- P	200.0		FNAL-099
MU- P	225.0		FNAL-398
MU- N	100.0		FNAL-098
MU- N	100.0	250.0	CERN-NA-004
MU- N	200.0		FNAL-098
MU- DEUT	225.0		FNAL-358
MU- BE	12.0		BNL-632
MU- BE	150.0		FNAL-448
MU- FE	90.0		FNAL-319
MU- FE	150.0		FNAL-315
MU- FE	240.0		FNAL-319
MU- CU	12.0		BNL-632
MU- CU	150.0		FNAL-448
MU- PB	12.0		BNL-632
MU- PB	150.0		FNAL-448
MU- NUCLEUS	12.0		BNL-632
MU- NUCLEUS	150.0		FNAL-382
MU+ LI	75.0		FNAL-501
MU+ LI	150.0		FNAL-501
MU+ LI	250.0		FNAL-501
MU+ BE	12.0		BNL-632
MU+ CL37	75.0		FNAL-531
MU+ CL37	150.0		FNAL-501
MU+ CL37	250.0		FNAL-531
MU+ FE	?		FNAL-203A
MU+ FE	90.0		FNAL-319
MU+ FE	150.0		FNAL-319
MU+ FE	225.0		FNAL-391
MU+ FE	240.0		FNAL-319
MU+ CU	12.0		BNL-632
MU+ GA	75.0		FNAL-501
MU+ GA	150.0		FNAL-501
MU+ GA	250.0		FNAL-501
MU+ PB	12.0		BNL-632
MU+ NUCLEUS	12.0		BNL-632
MU+ NUCLEUS	200.0		FNAL-509
MUON NUCLEUS	90.0	240.0	FNAL-467
MUON NUCLEUS	200.0		FNAL-424
PION E-	300.0		CERN-NA-007
PI+ E-	200.0		FNAL-446
PI+ PI-	5.7E-02	5.2	ANL-E-400
PI+ PI-	10.0		SLAC-E-128
PI+ P	?		FNAL-236A
PI+ P	?		FNAL-246
PI+ P	?		FNAL-341
PI+ P	1.5	2.4	CERN-S-160
PI+ P	1.5	2.6	RHEL-193
PI+ P	2.0	8.0	ANL-E-365

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
PI+ P	>4.0		BNL-556
PI+ P	5.0		CERN-S-144
PI+ P	5.0	20.0	SERP-E-102
PI+ P	6.0	10.0	BNL-594
PI+ P	6.7		SLAC-BC-060
PI+ P	8.0		ANL-E-400
PI+ P	8.0		ANL-E-436
PI+ P	10.0		BNL-716
PI+ P	10.0		CERN-S-121
PI+ P	10.0		CERN-S-144
PI+ P	10.0		SLAC-E-129
PI+ P	10.0	15.0	BNL-726
PI+ P	10.0	100.0	FNAL-290
PI+ P	12.0		SLAC-BC-059
PI+ P	13.0		SLAC-BC-061
PI+ P	15.0		BNL-671
PI+ P	16.0		SLAC-E-131
PI+ P	17.0		SLAC-E-123A
PI+ P	17.0		SLAC-E-123B
PI+ P	18.0		SLAC-BC-065
PI+ P	20.0		CERN-WA-010
PI+ P	20.0	120.0	FNAL-099
PI+ P	20.0	500.0	FNAL-104
PI+ P	25.0	200.0	FNAL-396
PI+ P	30.0		CERN-WA-003
PI+ P	40.0		CERN-WA-019
PI+ P	40.0		FNAL-324
PI+ P	50.0		CERN-WA-008
PI+ P	50.0		CERN-WA-009
PI+ P	50.0		FNAL-007
PI+ P	50.0		FNAL-061
PI+ P	50.0		FNAL-110A
PI+ P	50.0		FNAL-118A
PI+ P	50.0	150.0	CERN-WA-006
PI+ P	50.0	200.0	FNAL-C69A
PI+ P	55.0		CERN-WA-003
PI+ P	75.0		CERN-WA-009
PI+ P	80.0		CERN-WA-003
PI+ P	80.0		CERN-WA-010
PI+ P	80.0		FNAL-007
PI+ P	80.0		FNAL-324
PI+ P	100.0		CERN-WA-008
PI+ P	100.0		CERN-WA-009
PI+ P	100.0		FNAL-961
PI+ P	100.0		FNAL-110A
PI+ P	100.0		FNAL-118A
PI+ P	100.0		FNAL-268
PI+ P	100.0		FNAL-597
PI+ P	100.0	350.0	FNAL-258
PI+ P	110.0		FNAL-007
PI+ P	125.0		CERN-WA-009
PI+ P	140.0		CERN-WA-008
PI+ P	140.0		FNAL-007
PI+ P	150.0		CERN-WA-009
PI+ P	150.0		FNAL-061
PI+ P	150.0		FNAL-118A
PI+ P	150.0		FNAL-268
PI+ P	150.0		FNAL-299
PI+ P	150.0		FNAL-331
PI+ P	160.0		FNAL-324
PI+ P	170.0		FNAL-007
PI+ P	175.0		FNAL-451
PI+ P	200.0		FNAL-110A
PI+ P	200.0		FNAL-260
PI+ P	200.0		FNAL-268
PI+ P	200.0		FNAL-369
PI+ P	200.0		FNAL-395
PI+ P	200.0		FNAL-557
PI+ P	200.0		FNAL-565
PI+ P	200.0		FNAL-570
PI+ P	300.0		FNAL-395
PI+ P	300.0		FNAL-557
PI+ P	400.0		FNAL-341
PI+ P	400.0		FNAL-557
PI+ N	5.0	20.0	SERP-E-102
PI+ N	6.0		ANL-E-358
PI+ N	6.0		ANL-E-380
PI+ N	10.0		SLAC-E-128
PI+ N	150.0		FNAL-331
PI+ NUCLEON	10.0		SLAC-E-128
PI+ NUCLEON	18.0		SLAC-BC-067
PI+ DEUT	5.0	20.0	SERP-E-091
PI+ DEUT	10.0		SLAC-E-128
PI+ DEUT	18.0		SLAC-BC-067
PI+ DEUT	20.0	500.0	FNAL-104
PI+ DEUT	25.0	200.0	FNAL-396
PI+ DEUT	50.0		FNAL-118A
PI+ DEUT	100.0		FNAL-118A
PI+ DEUT	150.0		FNAL-118A
PI+ DEUT	200.0		FNAL-295
PI+ HE	1.0	3.0	ANL-E-406
PI+ BE	175.0		FNAL-451
PI+ C	0.2		FNAL-444
PI+ C	1.0	3.0	ANL-E-406
PI+ NE	1.0	3.0	ANL-E-406
PI+ MG	100.0		FNAL-557
PI+ AL	175.0		FNAL-451

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
PI+ AL	200.0		FNAL-565
PI+ CU	175.0		FNAL-451
PI+ AG	200.0		FNAL-565
PI+ SN	175.0		FNAL-451
PI+ AU	100.0		FNAL-597
PI+ AU	200.0		FNAL-565
PI+ PB	175.0		FNAL-451
PI+ U	1.0	3.0	ANL-E-406
PI+ NUCLEUS	?		BNL-654
PI+ NUCLEUS	?		FNAL-379
PI+ NUCLEUS	20.0		CERN-WA-035
PI+ NUCLEUS	43.0		CERN-WA-035
PI+ NUCLEUS	40.0		CERN-WA-039
PI+ NUCLEUS	100.0		FNAL-178
PI+ NUCLEUS	100.0	300.0	CERN-WA-010
PI+ NUCLEUS	100.0	350.0	FNAL-258
PI+ NUCLEUS	200.0		FNAL-178
PI+	3.0	15.0	CERN-S-150
PI+	25.0		FNAL-327
PI+	50.0		FNAL-327
PI+	100.0		FNAL-327
PI+	175.0		FNAL-527
PI0	?		SERP-E-119
PI- E-	100.0		FNAL-216
PI- E-	200.0		FNAL-216
PI- E-	200.0		FNAL-446
PI- P	?		FNAL-236A
PI- P	?		FNAL-246
PI- P	0.6	3.5	RHEL-C81
PI- P	1.0	2.0	ANL-E-363
PI- P	1.0	2.0	RHEL-128
PI- P	1.0	2.1	RHEL-166
PI- P	1.1		SERP-E-092
PI- P	1.4	2.0	RHEL-114
PI- P	1.8	3.0	KEK-019
PI- P	2.0	4.0	KEK-021
PI- P	2.0	8.0	ANL-E-365
PI- P	4.0		CERN-T-227
PI- P	>4.0		BNL-556
PI- P	4.5		BNL-557
PI- P	5.0		CERN-S-134
PI- P	5.0		CERN-S-144
PI- P	[illegible]	15.0	CERN-S-153
PI- P	5.0	15.0	CERN-S-157
PI- P	5.0	20.0	SERP-E-091
PI- P	5.1		ANL-E-379
PI- P	6.0		ANL-E-337
PI- P	6.0		ANL-E-358
PI- P	6.0		ANL-E-380
PI- P	6.0		KEK-005
PI- P	6.0		KEK-012
PI- P	6.0	10.0	BNL-594
PI- P	7.0		BNL-557
PI- P	8.0		BNL-715
PI- P	8.2	9.5	ANL-E-411
PI- P	8.5		ANL-E-397
PI- P	8.5		ANL-E-420
PI- P	8.5		ANL-E-428
PI- P	10.0		CERN-S-131
PI- P	10.0		CERN-S-144
PI- P	10.0		SLAC-E-127
PI- P	10.0	15.0	BNL-726
PI- P	10.0	100.0	FNAL-290
PI- P	12.0		BNL-557
PI- P	12.0		SLAC-E-123A
PI- P	12.0		SLAC-E-123B
PI- P	13.0		SERP-E-116
PI- P	15.0		BNL-671
PI- P	15.0	40.0	SERP-E-073
PI- P	15.0	40.0	SERP-E-076
PI- P	16.0		CERN-WA-040
PI- P	16.0		SLAC-E-127
PI- P	17.0		SLAC-E-123A
PI- P	17.0		SLAC-E-123B
PI- P	17.2		CERN-S-136
PI- P	18.0		SLAC-BC-065
PI- P	20.0		BNL-686
PI- P	20.0		BNL-688
PI- P	20.0		BNL-705
PI- P	20.0		CERN-WA-007
PI- P	20.0		CERN-WA-010
PI- P	22.0	25.0	BNL-675
PI- P	22.0	500.0	FNAL-104
PI- P	24.0		BNL-692
PI- P	25.0		SERP-E-116
PI- P	25.0	40.0	SERP-E-094
PI- P	25.0	200.0	FNAL-396
PI- P	30.0		CERN-WA-003
PI- P	40.0		CERN-WA-007
PI- P	40.0		CERN-WA-010
PI- P	40.0		FNAL-324
PI- P	40.0		SERP-E-040
PI- P	40.0		SERP-E-112
PI- P	40.0		SERP-E-116
PI- P	50.0		CERN-WA-039
PI- P	50.0		FNAL-007
PI- P	50.0		FNAL-061

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
PI- P	50.0		FNAL-110A
PI- P	50.0	150.0	CERN-WA-006
PI- P	50.0	200.0	FNAL-069A
PI- P	55.0		CERN-WA-003
PI- P	60.0		CERN-WA-007
PI- P	70.0		CERN-WA-030
PI- P	75.0		CERN-WA-009
PI- P	83.0		CERN-WA-003
PI- P	80.0		CERN-WA-007
PI- P	80.0		CERN-WA-010
PI- P	80.0		FNAL-007
PI- P	80.0		FNAL-324
PI- P	100.0		CERN-WA-009
PI- P	100.0		FNAL-061
PI- P	100.0		FNAL-083A
PI- P	100.0		FNAL-110A
PI- P	100.0		FNAL-268
PI- P	100.0		FNAL-350
PI- P	100.0		FNAL-557
PI- P	100.0	350.0	FNAL-258
PI- P	110.0		FNAL-007
PI- P	125.0		CERN-WA-009
PI- P	140.0		FNAL-007
PI- P	150.0		CERN-WA-009
PI- P	150.0		CERN-WA-011
PI- P	150.0		FNAL-061
PI- P	150.0		FNAL-268
PI- P	150.0		FNAL-299
PI- P	150.0		FNAL-331
PI- P	150.0		FNAL-350
PI- P	150.0	300.0	CERN-WA-038
PI- P	150.0		FNAL-324
PI- P	170.0		FNAL-007
PI- P	200.0		FNAL-099
PI- P	200.0		FNAL-110A
PI- P	200.0		FNAL-260
PI- P	200.0		FNAL-268
PI- P	200.0		FNAL-350
PI- P	200.0		FNAL-369
PI- P	200.0		FNAL-557
PI- P	200.0		FNAL-570
PI- P	300.0		FNAL-557
PI- P	360.0		FNAL-281
PI- P	360.0		FNAL-384
PI- P	360.0		FNAL-597
PI- P	400.0		FNAL-138
PI- P	400.0		FNAL-557
PI- N	150.0		FNAL-331
PI- N	200.0		FNAL-338
PI- N	400.0		FNAL-338
PI- DEUT	5.0	20.0	SERP-E-091
PI- DEUT	8.0		SLAC-E-103
PI- DEUT	16.0		SLAC-E-103
PI- DEUT	20.0	500.0	FNAL-104
PI- DEUT	25.0	200.0	FNAL-396
PI- DEUT	50.0	300.0	CERN-NA-008
PI- DEUT	200.0		FNAL-338
PI- DEUT	400.0		FNAL-338
PI- HE	1.0	3.0	ANL-E-406
PI- HE	5.0		CERN-S-143
PI- HE	50.0	200.0	FNAL-086A
PI- HE	50.0	300.0	CERN-NA-038
PI- BE	55.0	57.0	SERP-E-117
PI- BE	200.0		FNAL-326
PI- C	0.2		FNAL-444
PI- C	1.0	3.0	ANL-E-406
PI- C	16.0		BNL-667
PI- C	24.0		BNL-687
PI- C	25.0		BNL-667
PI- NE	1.0	3.0	ANL-E-406
PI- NE	200.0		FNAL-089
PI- MG	100.0		FNAL-597
PI- MG	200.0		FNAL-597
PI- CR	300.0		FNAL-525
PI- CU	16.0		BNL-667
PI- CU	24.0		BNL-687
PI- CU	25.0	80.0	CERN-WA-012
PI- CU	27.0		SERP-E-138
PI- CU	40.0		SERP-E-138
PI- CU	200.0		FNAL-415
PI- AG	300.0		FNAL-525
PI- WT	16.0		BNL-687
PI- WT	24.0		BNL-687
PI- WT	300.0		FNAL-525
PI- AU	100.0		FNAL-597
PI- AU	360.0		FNAL-597
PI- U	1.0	3.0	ANL-E-406
PI- NUCLEUS	7		BNL-654
PI- NUCLEUS	7		FNAL-379
PI- NUCLEUS	20.0		CERN-WA-035
PI- NUCLEUS	40.0		CERN-WA-035
PI- NUCLEUS	40.0		CERN-WA-039
PI- NUCLEUS	100.0		FNAL-178
PI- NUCLEUS	100.0	300.0	CERN-NA-010
PI- NUCLEUS	100.0	300.0	FNAL-387
PI- NUCLEUS	100.0	350.0	FNAL-258
PI- NUCLEUS	150.0		FNAL-272
PI- NUCLEUS	200.0		FNAL-178
PI- NUCLEUS	200.0		FNAL-339
PI- NUCLEUS	200.0		FNAL-490
PI- NUCLEUS	200.0		FNAL-515
PI- NUCLEUS	200.0	400.0	FNAL-362
PI- NUCLEUS	225.0		FNAL-416
PI- NUCLEUS	300.0		FNAL-272
PI- NUCLEUS	300.0		FNAL-481
PI- NUCLEUS	300.0		FNAL-503
PI- NUCLEUS	300.0		FNAL-506
PI- NUCLEUS	300.0		FNAL-568
PI- NUCLEUS	300.0		FNAL-573
PI- NUCLEUS	300.0		FNAL-574
PI-	7		SERP-E-115
PI-	3.0	15.0	CERN-S-150
PI-	25.0		FNAL-327
PI-	50.0		FNAL-327
PI-	100.0		FNAL-327
PI-	175.0		FNAL-327
K+ E-	200.0		FNAL-446
K+ P	7		FNAL-236A
K+ P	0.5		BNL-524
K+ P	0.5	1.1	BNL-691
K+ P	0.7	1.1	BNL-524
K+ P	2.0	8.0	ANL-E-365
K+ P	4.0	6.0	BNL-546
K+ P	4.0	6.0	BNL-596
K+ P	5.0		CERN-S-144
K+ P	6.0	10.0	BNL-594
K+ P	10.0		CERN-S-131
K+ P	10.0		CERN-S-144
K+ P	20.0		CERN-WA-010
K+ P	20.0	500.0	FNAL-104
K+ P	25.0	200.0	FNAL-396
K+ P	32.0		SERP-E-078
K+ P	40.0		CERN-WA-010
K+ P	40.0		FNAL-324
K+ P	50.0		CERN-NA-008
K+ P	50.0		CERN-WA-009
K+ P	50.0		FNAL-007
K+ P	50.0		FNAL-110A
K+ P	50.0		FNAL-118A
K+ P	50.0	150.0	CERN-WA-006
K+ P	50.0	200.0	FNAL-069A
K+ P	50.0	200.0	FNAL-096
K+ P	70.0		CERN-WA-027
K+ P	75.0		CERN-WA-009
K+ P	80.0		CERN-WA-010
K+ P	80.0		FNAL-007
K+ P	80.0		FNAL-324
K+ P	100.0		CERN-NA-038
K+ P	100.0		CERN-WA-009
K+ P	100.0		FNAL-110A
K+ P	100.0		FNAL-118A
K+ P	100.0		FNAL-597
K+ P	110.0		FNAL-007
K+ P	140.0		CERN-NA-008
K+ P	140.0		FNAL-007
K+ P	150.0		FNAL-118A
K+ P	150.0		FNAL-299
K+ P	150.0		FNAL-331
K+ P	160.0		FNAL-324
K+ P	170.0		FNAL-007
K+ P	175.0		FNAL-451
K+ P	200.0		FNAL-110A
K+ P	200.0		FNAL-557
K+ P	200.0		FNAL-570
K+ P	300.0		FNAL-557
K+ P	400.0		FNAL-557
K+ N	0.7	0.5	BNL-641
K+ N	0.7	1.4	RHEL-136
K+ N	1.3		KEK-034
K+ N	1.6		KEK-034
K+ N	1.6		KEK-034
K+ N	5.0	20.0	SERP-E-091
K+ N	5.0	20.0	SERP-E-102
K+ N	6.0		CERN-S-137
K+ N	75.0		FNAL-565
K+ N	100.0		FNAL-585
K+ N	150.0		FNAL-331
K+ N	150.0		FNAL-585
K+ DEUT	5.0	20.0	SERP-E-091
K+ DEUT	20.0	500.0	FNAL-104
K+ DEUT	25.0	200.0	FNAL-396
K+ DEUT	50.0		FNAL-118A
K+ DEUT	100.0		FNAL-118A
K+ DEUT	150.0		FNAL-118A
K+ HE	1.0	3.0	ANL-E-406
K+ BE	175.0		FNAL-451
K+ C	1.0	3.0	ANL-E-406
K+ NE	1.0	3.0	ANL-E-406
K+ MG	100.0		FNAL-597
K+ AL	175.0		FNAL-451
K+ CU	175.0		FNAL-451
K+ SN	175.0		FNAL-451
K+ AU	100.0		FNAL-597
K+ PB	175.0		FNAL-451

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
K+ U	1.0	3.0	ANL-E-406
K+ NUCLEUS	?		BNL-694
K+ NUCLEUS	?		FNAL-379
K+ NUCLEUS	20.0		CERN-WA-035
K+ NUCLEUS	40.0		CERN-WA-035
K+ NUCLEUS	40.0		CERN-WA-039
K+ NUCLEUS	100.0		FNAL-178
K+ NUCLEUS	200.0		FNAL-178
K+	0.5	0.7	KEK-010
K+	3.0	15.0	CERN-S-150
K+	25.0		FNAL-327
K+	50.0		FNAL-327
K+	100.0		FNAL-327
K+	175.0		FNAL-327
K0	6.0	16.0	BNL-615
KL E-	?		FNAL-22b
KL P	?		FNAL-425
KL P	2.0	8.0	CERN-S-147
KL P	4.0	16.0	CERN-S-130
KL P	>40.0		FNAL-082
KL C	>40.0		FNAL-082
KL AL	30.0	150.0	FNAL-486
KL CU	8.0	20.0	SLAC-E-119
KL CU	30.0	150.0	FNAL-486
KL SN	30.0	150.0	FNAL-486
KL PB	30.0	150.0	FNAL-486
KL NUCLEUS	?		FNAL-226
KL	?		BNL-631
KL	0.	3.0	BNL-696
KL	1.0	4.0	RHEL-188
KL	2.0	6.0	ANL-E-333
KL	50.0	130.0	FNAL-533
AKO	6.0	16.0	BNL-615
K- E-	100.0		FNAL-216
K- E-	200.0		FNAL-216
K- E-	200.0		FNAL-446
K- E-	250.0		FNAL-456
K- P	?		FNAL-236A
K- P	0.		BNL-643
K- P	0.		CERN-S-151
K- P	0.		RHEL-181
K- P	0.4		ANL-E-347
K- P	0.5	1.0	BNL-634
K- P	0.5	1.1	BNL-691
K- P	0.7		BNL-702
K- P	0.7	1.2	BNL-524
K- P	0.7	1.4	RHEL-136
K- P	1.2	1.9	RHEL-120
K- P	1.3		KEK-034
K- P	1.6		KEK-034
K- P	1.9		KEK-034
K- P	2.0	8.0	ANL-E-365
K- P	3.0		BNL-593
K- P	4.0		BNL-673
K- P	4.0	6.0	BNL-546
K- P	4.0	6.0	BNL-556
K- P	4.6		BNL-553
K- P	5.0		BNL-673
K- P	5.0		CERN-S-144
K- P	5.0	20.0	SERP-E-091
K- P	5.1		ANL-E-375
K- P	6.0		CERN-S-140
K- P	6.0	10.0	BNL-594
K- P	6.5		ANL-E-289-292
K- P	6.7		SLAC-BC-060
K- P	7.0	9.0	SLAC-BC-061
K- P	8.2		CERN-T-205
K- P	10.0		CERN-S-131
K- P	10.0		CERN-S-144
K- P	10.0		SLAC-E-127
K- P	11.0		SLAC-E-132
K- P	13.0		SERP-E-116
K- P	20.0		CERN-WA-007
K- P	20.0		CERN-WA-010
K- P	20.0	150.0	FNAL-383
K- P	20.0	500.0	FNAL-104
K- P	25.0		SERP-E-116
K- P	25.0	200.0	FNAL-356
K- P	30.0		CERN-WA-003
K- P	32.0		SERP-E-077
K- P	40.0		CERN-WA-007
K- P	40.0		CERN-WA-010
K- P	40.0		FNAL-324
K- P	40.0		SERP-E-112
K- P	40.0		SERP-E-116
K- P	50.0		CERN-WA-009
K- P	50.0		FNAL-007
K- P	50.0		FNAL-110A
K- P	50.0	150.0	CERN-WA-006
K- P	50.0	200.0	FNAL-069A
K- P	50.0	200.0	FNAL-096
K- P	55.0		CERN-WA-003
K- P	60.0		CERN-WA-007
K- P	70.0		CERN-WA-026
K- P	75.0		CERN-WA-009

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
K- P	75.0		FNAL-585
K- P	80.0		CERN-WA-003
K- P	80.0		CERN-WA-007
K- P	80.0		CERN-WA-010
K- P	80.0		FNAL-007
K- P	80.0		FNAL-324
K- P	100.0		CERN-WA-009
K- P	100.0		FNAL-083A
K- P	100.0		FNAL-110A
K- P	100.0		FNAL-585
K- P	110.0		CERN-WA-028
K- P	110.0		FNAL-007
K- P	140.0		FNAL-007
K- P	150.0		FNAL-259
K- P	150.0		FNAL-331
K- P	150.0		FNAL-585
K- P	150.0	300.0	CERN-WA-008
K- P	160.0		FNAL-324
K- P	170.0		FNAL-007
K- P	200.0		FNAL-110A
K- P	200.0		FNAL-557
K- P	300.0		FNAL-557
K- P	400.0		FNAL-557
K- N	150.0		FNAL-331
K- DEUT	0.		BNL-643
K- DEUT	1.4		CERN-S-159
K- DEUT	5.0	20.0	SERP-E-091
K- DEUT	20.0	500.0	FNAL-104
K- DEUT	25.0	200.0	FNAL-366
K- HE	0.		BNL-643
K- HE	1.0	3.0	ANL-E-406
K- BE	0.6		BNL-664
K- C	0.2		FNAL-444
K- C	0.6		BNL-664
K- C	0.8		BNL-692
K- C	1.0	3.0	ANL-E-406
K- NE	1.0	3.0	ANL-E-406
K- CA	0.8		BNL-692
K- U	1.0	3.0	ANL-E-406
K- NUCLEUS	?		BNL-694
K- NUCLEUS	?		FNAL-379
K- NUCLEUS	0.		CERN-S-152
K- NUCLELS	0.		RHEL-113
K- NUCLEUS	0.6		BNL-646
K- NUCLEUS	0.8		BNL-646
K- NUCLEUS	0.9		CERN-P-011
K- NUCLEUS	0.9		CERN-S-154
K- NUCLEUS	20.0		CERN-WA-035
K- NUCLEUS	40.0		CERN-WA-035
K- NUCLEUS	40.0		CERN-WA-039
K- NUCLEUS	100.0		FNAL-178
K- NUCLEUS	150.0		FNAL-272
K- NUCLEUS	200.0		FNAL-178
K- NUCLEUS	300.0		FNAL-272
K-	?		SERP-E-115
K-	3.0	15.0	CERN-S-150
K-	25.0		FNAL-327
K-	50.0		FNAL-327
K-	100.0		FNAL-327
K-	175.0		FNAL-327
KAON E-	300.0		CERN-WA-007

PROTON-PROTON COLLIDING BEAM EXPERIMENTS AT THE CERN-ISR ARE ORDERED BY THE EQUIVALENT LAB MOMENTUM FOR SCATTERING ON A STATIONARY TARGET RATHER THAN BY THE ACTUAL LAB (= CENTER-OF-MASS) MOMENTUM.

P P	?		CERN-R-107
P P	?		CERN-R-207
P P	?		CERN-R-301
P P	?		CERN-R-406
P P	?		CERN-R-407-408
P P	?		CERN-R-410-413
P P	?		CERN-R-414
P P	?		CERN-R-804
P P	?		FNAL-236A
P P	?		FNAL-246
P P	?		FNAL-321
P P	?		FNAL-361
P P	?		FNAL-367
P P	?		FNAL-472
P P	1.0		ANL-E-434
P P	1.0	3.0	ANL-E-365
P P	1.0		ANL-E-433
P P	1.1		ANL-E-434
P P	1.1		ANL-E-433
P P	1.2		ANL-E-416
P P	1.2		ANL-E-434
P P	1.3		ANL-E-434
P P	1.3		ANL-E-433
P P	1.5		ANL-E-416
P P	1.5		ANL-E-434
P P	1.6		ANL-E-434
P P	1.7		ANL-E-434
P P	1.7		ANL-E-433

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
P P	1.7		ANL-E-437
P P	1.9		ANL-E-416
P P	2.0		ANL-E-402
P P	2.0		ANL-E-418
P P	2.0		ANL-E-425
P P	2.0	4.0	ANL-E-426
P P	2.0	8.0	ANL-E-365
P P	2.3		ANL-E-433
P P	2.5		ANL-E-416
P P	3.0		ANL-E-335
P P	3.0		ANL-E-402
P P	3.0		ANL-E-416
P P	3.0		ANL-E-418
P P	3.0		ANL-E-425
P P	4.0		ANL-E-335
P P	4.0		ANL-E-402
P P	4.0		ANL-E-415
P P	4.0		ANL-E-416
P P	4.0		ANL-E-418
P P	5.0		BNL-703
P P	5.0		CERN-S-144
P P	5.8		BNL-722
P P	6.0		ANL-E-339
P P	6.0		ANL-E-366
P P	6.0		ANL-E-367
P P	6.0		ANL-E-381
P P	6.0		ANL-E-385
P P	6.0		ANL-E-393
P P	6.0		ANL-E-399
P P	6.0		ANL-E-401
P P	6.0		ANL-E-432
P P	6.0		ANL-E-407
P P	6.0		ANL-E-416
P P	6.0		ANL-E-418
P P	6.0		ANL-E-419
P P	6.0		ANL-E-425
P P	6.0		ANL-E-427
P P	6.0		ANL-E-431
P P	6.0		ANL-E-444
P P	6.0		ANL-E-446
P P	6.0	12.0	ANL-E-432
P P	6.0	12.0	ANL-E-434
P P	7.0	500.0	FNAL-198A
P P	8.0		ANL-E-415
P P	8.0		ANL-E-418
P P	8.0		KEK-050
P P	8.0	400.0	FNAL-381
P P	9.0		ANL-E-391
P P	9.0		SLAC-BC-064
P P	10.0		CERN-S-131
P P	12.0		CERN-S-144
P P	11.0		ANL-E-371
P P	11.7		ANL-E-421
P P	11.7		ANL-E-435
P P	11.7		ANL-E-438
P P	11.7		AN -E-435
P P	12.0		ANL-E-367
P P	12.0		ANL-E-391
P P	12.0		ANL-E-395
P P	12.0		ANL-E-408
P P	12.0		ANL-E-415
P P	12.0		ANL-E-418
P P	12.0		ANL-E-427
P P	12.0		ANL-E-434
P P	12.0		ANL-E-441
P P	12.0		ANL-E-445
P P	15.0		BNL-571
P P	20.0		BNL-658
P P	20.0		CERN-WA-007
P P	20.0		CERN-WA-010
P P	20.0	50.0	FNAL-363
P P	20.0	500.0	FNAL-104
P P	22.0		BNL-658
P P	24.0		BNL-658
P P	24.0		CERN-S-141
P P	25.0	200.0	FNAL-356
P P	25.0	300.0	FNAL-317
P P	26.0		BNL-658
P P	28.0		BNL-658
P P	30.0	300.0	FNAL-552
P P	30.0	400.0	FNAL-313
P P	40.0		CERN-WA-007
P P	40.0		CERN-WA-010
P P	40.0		FNAL-324
P P	50.0		CERN-NA-008
P P	50.0		FNAL-007
P P	50.0		FNAL-061
P P	50.0		FNAL-110A
P P	50.0		FNAL-118A
P P	50.0		SERP-E-056
P P	50.0	150.0	CERN-WA-006
P P	50.0	200.0	FNAL-069A
P P	50.0	200.0	FNAL-C56
P P	50.0	400.0	FNAL-522
P P	60.0		CERN-WA-007
P P	70.0		SERP-E-100
P P	70.0		SERP-E-110
P P	70.0		SERP-E-056
P P	80.0		CERN-WA-CC7
P P	80.0		CERN-WA-010
P P	80.0		FNAL-007
P P	80.0		FNAL-324
P P	100.0		CERN-NA-008
P P	100.0		CERN-WA-009
P P	100.0		FNAL-061
P P	100.0		FNAL-110A
P P	100.0		FNAL-118A
P P	100.0		FNAL-196
P P	100.0		FNAL-284
P P	100.0		FNAL-300
P P	100.0		FNAL-597
P P	100.0	500.0	FNAL-095A
P P	110.0		FNAL-007
P P	140.0		CERN-NA-008
P P	140.0		FNAL-007
P P	150.0		FNAL-061
P P	150.0		FNAL-118A
P P	150.0		FNAL-299
P P	150.0		FNAL-331
P P	160.0		FNAL-324
P P	170.0		FNAL-007
P P	175.0		FNAL-451
P P	200.0		FNAL-110A
P P	200.0		FNAL-177A
P P	200.0		FNAL-261
P P	200.0		FNAL-284
P P	200.0		FNAL-300
P P	200.0		FNAL-369
P P	200.0		FNAL-393
P P	200.0		FNAL-557
P P	200.0		FNAL-565
P P	200.0		FNAL-570
P P	205.0		FNAL-280
P P	250.0		FNAL-118A
P P	257.0	2047.5	CERN-R-209
P P	257.0	2047.5	CERN-R-401
P P	257.0	2047.5	CERN-R-415
P P	257.0	2047.5	CERN-R-416
P P	257.0	2047.5	CERN-R-807
P P	281.0		CERN-R-411
P P	281.0	2114.1	CERN-R-702
P P	263.3		CERN-R-108
P P	300.0		FNAL-209
P P	300.0		FNAL-268
P P	300.0		FNAL-281
P P	300.0		FNAL-284
P P	300.0		FNAL-300
P P	300.0		FNAL-343
P P	300.0		FNAL-395
P P	330.0		FNAL-404
P P	300.0		FNAL-557
P P	400.0		FNAL-138
P P	400.0		FNAL-177A
P P	400.0		FNAL-284
P P	400.0		FNAL-300
P P	400.0		FNAL-341
P P	400.0		FNAL-406
P P	400.0		FNAL-441
P P	400.0		FNAL-557
P P	400.0		FNAL-565
P P	478.7	2047.5	CERN-R-501
P P	478.7	2047.5	CERN-R-607
P P	478.7	2047.5	CERN-R-836
P P	480.5		CERN-R-805
P P	498.0		CERN-R-108
P P	500.0		FNAL-303
P P	511.2		CERN-R-411
P P	1030.7		CERN-R-109
P P	1032.6		CERN-R-805
P P	1068.6		CERN-R-108
P P	1078.2		CERN-R-411
P P	1440.0		CERN-R-109
P P	1441.8		CERN-R-605
P P	1441.8		CERN-R-606
P P	1441.8		CERN-R-805
P P	1479.1		CERN-R-108
P P	1495.5		CERN-R-411
P P	2047.5		CERN-R-109
P P	2049.3		CERN-R-805
P P	2C74.0		CERN-R-108
P P	2114.1		CERN-R-411
P N	1.7		ANL-E-437
P N	2.0		ANL-E-418
P N	3.0		ANL-E-418
P N	4.0		ANL-E-418
P N	6.0		ANL-E-418
P N	6.0		ANL-E-427
P N	6.0		ANL-E-433
P N	8.0	400.0	FNAL-381
P N	9.0		ANL-E-391
P N	12.0		ANL-E-391
P N	12.0		ANL-E-427
P N	24.0		CERN-S-156
P N	70.0		SERP-E-110

BEAM-TARGET-MOMENTUM INDEX

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
P N	100.0		FNAL-196
P N	150.0		FNAL-331
P N	220.0		FNAL-194
P N	225.0		FNAL-280
P N	300.0		FNAL-209
P N	400.0		FNAL-194
P DEUT	1.3		ANL-E-437
P DEUT	1.7		ANL-E-437
P DEUT	2.0		ANL-E-339
P DEUT	2.3		ANL-E-437
P DEUT	3.0		ANL-E-335
P DEUT	4.0		ANL-E-339
P DEUT	6.0		ANL-E-335
P DEUT	7.0	500.0	FNAL-198A
P DEUT	8.0	400.0	FNAL-381
P DEUT	20.0	500.0	FNAL-104
P DEUT	25.0	230.0	FNAL-396
P DEUT	25.0	300.0	FNAL-317
P DEUT	30.0	300.0	FNAL-552
P DEUT	50.0		FNAL-118A
P DEUT	50.0	400.0	CERN-HA-008
P DEUT	70.0		SERP-E-100
P DEUT	100.0		FNAL-118A
P DEUT	100.0		FNAL-196
P DEUT	100.0		FNAL-300
P DEUT	150.0		FNAL-118A
P DEUT	200.0		FNAL-194
P DEUT	200.0		FNAL-303
P DEUT	205.0		FNAL-280
P DEUT	250.0		FNAL-118A
P DEUT	300.0		FNAL-309
P DEUT	400.0		FNAL-194
P DEUT	400.0		FNAL-300
P DEUT	500.0		FNAL-303
P HE	0.4	5.0	ANL-E-414
P HE	1.0	3.0	ANL-E-406
P HE	6.0		ANL-E-351
P HE	8.0	500.0	FNAL-289
P HE	50.0	400.0	CERN-HA-008
P BE	?		BNL-669
P BE	28.5		BNL-658
P BE	70.0		SERP-E-101
P BE	175.0		FNAL-451
P BE	200.0		FNAL-567
P BE	400.0		FNAL-326
P BE	400.0		FNAL-403
P BE	400.0		FNAL-469
P C	0.2		FNAL-444
P C	1.0	3.0	ANL-E-406
P C	100.0	300.0	FNAL-418
P C	200.0		FNAL-369
P C	400.0		FNAL-547
P NE	1.0	3.0	ANL-E-406
P NE	400.0		FNAL-291
P MG	100.0		FNAL-597
P AL	175.0		FNAL-451
P AL	200.0		FNAL-565
P AL	400.0		FNAL-547
P AL	400.0		FNAL-565
P CL	90.0	240.0	FNAL-467
P CR	500.0		FNAL-524
P FE	70.0		SERP-E-114
P FE	400.0		FNAL-439
P CU	70.0		SERP-E-101
P CU	100.0	300.0	FNAL-418
P CU	175.0		FNAL-451
P CU	400.0		CERN-HA-041
P CU	400.0		CERN-HA-043
P CU	400.0		FNAL-436
P AG	200.0		FNAL-565
P AG	400.0		FNAL-565
P AG	500.0		FNAL-524
P SN	175.0		FNAL-451
P WT	28.0		BNL-720
P WT	30.0		BNL-719
P WT	100.0	300.0	FNAL-418
P WT	500.0		FNAL-524
P AU	100.0		FNAL-597
P AU	200.0		FNAL-565
P AU	400.0		FNAL-565
P TL	90.0	240.0	FNAL-467
P PB	175.0		FNAL-451
P PB	400.0		FNAL-547
P U	1.0	3.0	ANL-E-406
P U	10.0	20.0	CERN-S-155
P U	12.3		ANL-E-424
P NUCLEUS	?		FNAL-276
P NUCLEUS	?		FNAL-379
P NUCLEUS	1.0	12.3	ANL-E-384
P NUCLEUS	1.0	12.3	ANL-E-422
P NUCLEUS	1.5		BNL-718
P NUCLEUS	2.5	10.0	BNL-675
P NUCLEUS	4.0	12.0	KEK-045
P NUCLEUS	5.0	16.0	BNL-712
P NUCLEUS	6.0		ANL-E-354
P NUCLEUS	6.0		ANL-E-403
P NUCLEUS	10.0	500.0	FNAL-442
P NUCLEUS	15.0		BNL-676
P NUCLEUS	20.0		CERN-HA-035
P NUCLEUS	21.0		BNL-676
P NUCLEUS	24.0		CERN-S-132
P NUCLEUS	28.0		BNL-718
P NUCLEUS	29.0		BNL-676
P NUCLEUS	40.0		CERN-HA-035
P NUCLEUS	40.0		CERN-HA-039
P NUCLEUS	55.0	230.0	FNAL-081A
P NUCLEUS	70.0		SERP-E-120
P NUCLEUS	70.0		SERP-E-121
P NUCLEUS	100.0		CERN-HA-032
P NUCLEUS	100.0		FNAL-178
P NUCLEUS	200.0		FNAL-008
P NUCLEUS	200.0		FNAL-C28A
P NUCLEUS	200.0		FNAL-048
P NUCLEUS	200.0		FNAL-178
P NUCLEUS	200.0		FNAL-271
P NUCLEUS	200.0		FNAL-435
P NUCLEUS	200.0	300.0	FNAL-466
P NUCLEUS	300.0		FNAL-251
P NUCLEUS	300.0		FNAL-333
P NUCLEUS	300.0		FNAL-374
P NUCLEUS	300.0		FNAL-419
P NUCLEUS	300.0		FNAL-421
P NUCLEUS	300.0		FNAL-426
P NUCLEUS	400.0		CERN-HA-020
P NUCLEUS	400.0		CERN-HA-038
P NUCLEUS	400.0		FNAL-239
P NUCLEUS	400.0		FNAL-243
P NUCLEUS	400.0		FNAL-245
P NUCLEUS	400.0		FNAL-249
P NUCLEUS	400.0		FNAL-251
P NUCLEUS	400.0		FNAL-265
P NUCLEUS	400.0		FNAL-279
P NUCLEUS	400.0		FNAL-292
P NUCLEUS	400.0		FNAL-329
P NUCLEUS	400.0		FNAL-336
P NUCLEUS	400.0		FNAL-346
P NUCLEUS	400.0		FNAL-385
P NUCLEUS	400.0		FNAL-423
P NUCLEUS	400.0		FNAL-428
P NUCLEUS	400.0		FNAL-434
P NUCLEUS	400.0		FNAL-461
P NUCLEUS	400.0		FNAL-462
P NUCLEUS	400.0		FNAL-463
P NUCLEUS	400.0		FNAL-468
P NUCLEUS	400.0		FNAL-495
P NUCLEUS	400.0		FNAL-499
P NUCLEUS	400.0		FNAL-545
P NUCLEUS	400.0		FNAL-575
P NUCLEUS	400.0		FNAL-592
P NUCLEUS	500.0		FNAL-048
P NUCLEUS	500.0		FNAL-249
P NUCLEUS	500.0		FNAL-271
P NUCLEUS	500.0		FNAL-288
P NUCLEUS	500.0		FNAL-329
P NUCLEUS	500.0		FNAL-435
P NUCLEUS	500.0		FNAL-494
P NUCLEUS	500.0		FNAL-508
P NUCLEUS	500.0		FNAL-576
P	3.0	15.0	CERN-S-150
P	25.0		FNAL-327
P	90.0		FNAL-327
P	50.0	500.0	FNAL-108
P	100.0		FNAL-327
P	175.0		FNAL-327
N P	0.	400.0	CERN-NA-006
N P	2.0		ANL-E-425
N P	3.0		ANL-E-425
N P	4.0		ANL-E-425
N P	6.0		ANL-E-444
N P	25.0	230.0	FNAL-396
N P	40.0	300.0	FNAL-248
N P	50.0	300.0	FNAL-305
N P	100.0	200.0	FNAL-366
N N	50.0	300.0	FNAL-305
N DEUT	25.0	200.0	FNAL-396
N DEUT	100.0	200.0	FNAL-366
N BE	26.0		BNL-656
N BE	30.0	300.0	FNAL-438
N BE	200.0		FNAL-397
N C	30.0	300.0	FNAL-438
N C	45.0		SERP-E-104
N AL	30.0	300.0	FNAL-438
N FE	30.0	300.0	FNAL-438
N CU	30.0	300.0	FNAL-438
N CD	30.0	300.0	FNAL-438
N WT	30.0	300.0	FNAL-438
N PB	30.0	300.0	FNAL-438
N U	30.0	300.0	FNAL-438
N NUCLEUS	50.0	300.0	FNAL-303
N NUCLEUS	100.0	200.0	FNAL-366
N NUCLEUS	300.0		FNAL-358
N NUCLEUS	303.0		FNAL-540
N NUCLEUS	400.0		FNAL-358
AN P	0.	0.8	ANL-E-333

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BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
AN P	0.	1.0	ANL-E-342
AN P	5.0E-02	0.7	BNL-626
AN P	50.0	300.0	FNAL-305
AN N	50.0	300.0	FNAL-305
AN NUCLEUS	0.	1.0	ANL-E-342
AN NUCLEUS	50.0	300.0	FNAL-305
AP P	?		BNL-660
AP P	?		FNAL-236A
AP P	0.		BNL-643
AP P	0.		CERN-S-135
AP P	0.		CERN-S-142
AP P	0.		CERN-S-151
AP P	0.	0.5	BNL-708
AP P	0.	0.5	CERN-S-161
AP P	0.	0.5	ANL-E-368
AP P	0.	0.6	ANL-E-303
AP P	0.	0.9	ANL-E-409
AP P	0.3	1.0	BNL-634
AP P	0.3	1.0	BNL-666
AP P	0.3	0.6	CERN-T-253
AP P	0.3	0.6	CERN-T-239
AP P	0.4		BNL-662
AP P	0.4	0.9	CERN-S-149
AP P	0.5		BNL-662
AP P	0.5		BNL-662
AP P	1.2	3.0	BNL-644
AP P	2.0	8.0	ANL-E-365
AP P	3.9		BNL-654
AP P	4.0	10.0	BNL-596
AP P	4.1		ANL-E-429
AP P	5.0		CERN-S-144
AP P	5.0	10.0	CERN-HA-013
AP P	6.0		BNL-601
AP P	6.3	10.0	BNL-596
AP P	6.3		SLAC-BC-068
AP P	6.3		BNL-654
AP P	7.3		CERN-T-237
AP P	7.9		CERN-HA-029
AP P	8.0		BNL-715
AP P	8.3		SLAC-E-129
AP P	8.7		BNL-654
AP P	8.9		SLAC-BC-068
AP P	9.0		SLAC-BC-064
AP P	10.0		CERN-S-144
AP P	10.0		SLAC-E-127
AP P	10.0	12.0	BNL-661
AP P	10.0	15.0	BNL-726
AP P	12.0		CERN-T-243
AP P	13.0		SERP-E-116
AP P	13.0		SLAC-E-129
AP P	15.0		BNL-671
AP P	15.0		CERN-HA-029
AP P	20.0		CERN-HA-007
AP P	23.0		CERN-HA-010
AP P	20.0	40.0	SERP-E-106
AP P	23.0	530.0	FNAL-104
AP P	22.4		SERP-E-083
AP P	25.0		SERP-E-116
AP P	25.0	200.0	FNAL-366
AP P	30.0	60.0	FNAL-344
AP P	32.0		SERP-E-122
AP P	40.0		CERN-HA-007
AP P	40.0		CERN-HA-010
AP P	40.0		FNAL-324
AP P	40.0		SERP-E-116
AP P	50.0		CERN-HA-009
AP P	50.0		FNAL-007
AP P	50.0		FNAL-110A
AP P	50.0	200.0	FNAL-069A
AP P	50.0	230.0	FNAL-056
AP P	60.0		CERN-HA-007
AP P	70.0		CERN-HA-031
AP P	75.0		CERN-HA-009
AP P	80.0		CERN-HA-007
AP P	80.0		CERN-HA-010
AP P	80.0		FNAL-007
AP P	80.0		FNAL-324
AP P	80.0	140.0	CERN-HA-042
AP P	100.0		CERN-HA-009
AP P	100.0		FNAL-383A
AP P	100.0		FNAL-110A
AP P	100.0		FNAL-311
AP P	100.0		FNAL-597
AP P	110.0		FNAL-007
AP P	140.0		FNAL-007
AP P	150.0		FNAL-299
AP P	150.0		FNAL-311
AP P	150.0		FNAL-331
AP P	150.0	300.0	CERN-HA-008
AP P	160.0		FNAL-324
AP P	170.0		FNAL-007
AP P	200.0		FNAL-110A
AP P	200.0		FNAL-302
AP P	200.0		FNAL-557
AP P	200.0		FNAL-570
AP P	300.0		FNAL-557
AP P	400.0		FNAL-557
AP N	0.3	0.6	CERN-T-250

BEAM AND TARGET	LAB MOMENTUM OR MOMENTUM RANGE (GEV/C)		EXPERIMENT
AP N	100.0		FNAL-345
AP N	150.0		FNAL-331
AP DEUT	?		BNL-660
AP DEUT	?		CERN-T-250
AP DEUT	0.		BNL-643
AP DEUT	0.	0.5	CERN-S-161
AP DEUT	0.	0.7	ANL-E-413
AP DEUT	0.5		BNL-701
AP DEUT	2.0	4.0	BNL-625
AP DEUT	12.0		CERN-T-246-248
AP DEUT	20.0	530.0	FNAL-104
AP DEUT	25.0	200.0	FNAL-396
AP DEUT	80.0	140.0	CERN-HA-042
AP HE	0.		BNL-643
AP HE	1.0	3.0	ANL-E-406
AP L16	0.		CERN-S-158
AP L17	0.		CERN-S-158
AP C	1.0	3.0	ANL-E-406
AP NE	0.	0.5	ANL-E-439
AP NE	1.0	3.0	ANL-E-406
AP MG	100.0		FNAL-597
AP AU	100.0		FNAL-597
AP U	1.0	3.0	ANL-E-406
AP NUCLEUS	?		BNL-654
AP NUCLEUS	?		FNAL-379
AP NUCLEUS	10.0	12.0	BNL-661
AP NUCLEUS	20.0		CERN-HA-035
AP NUCLEUS	40.0		CERN-HA-035
AP NUCLEUS	40.0		CERN-HA-039
AP NUCLEUS	100.0	400.0	FNAL-537
AP NUCLEUS	150.0		FNAL-272
AP NUCLEUS	300.0		FNAL-272
AP	3.0	15.0	CERN-S-150
AP	25.0		FNAL-327
AP	50.0		FNAL-327
AP	100.0		FNAL-327
AP	175.0		FNAL-327
LAMBDA P	30.0	60.0	SERP-E-120
LAMBDA P	60.0	130.0	FNAL-008
LAMBDA DEUT	30.0	60.0	SERP-E-120
LAMBDA	6.0	15.0	BNL-597
LAMBDA	10.0		KEK-049
LAMBDA	20.0	60.0	SERP-E-120
LAMBDA	60.0	230.0	FNAL-361
LAMBDA	150.0	210.0	FNAL-440
ALAMBDA P	60.0	130.0	FNAL-008
SIGMA+ P	30.0	60.0	SERP-E-120
SIGMA+ P	100.0	350.0	FNAL-497
SIGMA+ DEUT	30.0	60.0	SERP-E-120
SIGMA+	20.0	60.0	SERP-E-120
SIGMA+	100.0		CERN-HA-002
SIGMA- P	30.0	60.0	SERP-E-120
SIGMA- P	80.0	140.0	CERN-HA-042
SIGMA- P	100.0	350.0	FNAL-497
SIGMA- DEUT	30.0	60.0	SERP-E-120
SIGMA- DEUT	80.0	140.0	CERN-HA-042
SIGMA-	?		BNL-618
SIGMA-	20.0	60.0	SERP-E-120
SIGMA-	100.0		CERN-HA-002
SIGMA-	100.0		CERN-HA-046
XI0 P	30.0	60.0	SERP-E-120
XI0 DEUT	30.0	60.0	SERP-E-120
XI0	20.0	60.0	SERP-E-120
XI- P	30.0	60.0	SERP-E-120
XI- P	80.0	140.0	CERN-HA-042
XI- P	100.0	350.0	FNAL-497
XI- DEUT	30.0	60.0	SERP-E-120
XI- DEUT	80.0	140.0	CERN-HA-042
XI-	?		BNL-618
XI-	20.0	60.0	SERP-E-120
XI-	100.0		CERN-HA-002
OMEGA- P	30.0	60.0	SERP-E-120
OMEGA- P	100.0	350.0	FNAL-497
OMEGA- DEUT	30.0	60.0	SERP-E-120
OMEGA-	20.0	60.0	SERP-E-120
OMEGA-	100.0		CERN-HA-046
DEUT P	1.9		ANL-E-442
DEUT P	2.2		ANL-E-442
DEUT P	2.4		ANL-E-442
DEUT P	2.7		ANL-E-442
DEUT P	2.7		ANL-E-443
DEUT P	3.4		ANL-E-442
DEUT P	3.4		ANL-E-443
DEUT	5.0	40.0	CERN-HA-033
ADEUT	5.0	40.0	CERN-HA-033
HE3	5.0	40.0	CERN-HA-033
AHE3	5.0	40.0	CERN-HA-033
T	5.0	40.0	CERN-HA-033
AT	5.0	40.0	CERN-HA-033
HE	5.0	40.0	CERN-HA-033
AHE	5.0	40.0	CERN-HA-033
LONGLIVED	5.0	40.0	CERN-HA-033
HADRON P	?		CERN-HA-003
HADRON P	?		CERN-HA-005
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CHARGED	50.0	280.0	FNAL-427
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BAILLON, P.	CERN	CERN-S-144
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GOTTFRIED, K.	CORN	FNAL-292
GOULIANOS, K.	ROCK	FNAL-396
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GRAFSTROM, P.	UUPP	CERN-WA-008
GRAMENITSKY, I.M.	JINR	SERP-E-083
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GREEN, D.R.	CMU	BNL-716
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HEINZELMANN, G.	MEIO	DESY-147
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SPOKESMAN INDEX

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OZAKI, S.	BNL	BNL-594
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O'NEILL, G.K.	PRIN	SLAC-SP-019
PALEVSKY, H.	BNL	BNL-646
PANVINI, R.	VAND	SLAC-E-103
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PONDROM, L.	WISC	FNAL-361
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ROBERTS, J.B.	RICE	ANL-E-425
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RUTHERFOURD, J.	TUFT	SLAC-E-108
RYKALIN, V.I.	SERP	SERP-E-110
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SAKITT, M.	BNL	BNL-641
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SANDLER, B.	ANL	ANL-E-385
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SANNES, F.	RUTG	FNAL-552
SANNES, F.	RUTG	FNAL-418
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SELOVE, W.	PENN	FNAL-395
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SENS, J.C.	?	CERN-R-207
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SHEPHARD, W.D.	NDAM	FNAL-597
SHIBATA, E.I.	PURD	ANL-E-379
SHIRAI, T.	KNGA	FNAL-509
SHOCHET, M.J.	EFI	FNAL-258
SHOCHET, M.J.	CHIC	FNAL-326
SINCLAIR, C.	SLAC	SLAC-E-122
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SMITH, P.F.	RHEL	RHEL-144
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SNOW, G.A.	UMD	FNAL-545
SOKOLOVSKY, V.V.	SERP	SERP-E-040
SOKOLOVSKY, V.V.	ITEP	SERP-E-096
SONDEREGGER, P.	CERN	CERN-WA-013

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STEINBERG, E.P.	ANL	ANL-E-424
STEINBERG, E.P.	ANL	ANL-E-384
STEINBERG, E.P.	ANL	ANL-E-422
STEINBERG, P.H.	UMD	FNAL-468
STEINBERGER, J.	CERN	CERN-WA-001
STEINBERGER, J.	CERN	CERN-WA-041
STIER, H.E.	FREI	CERN-NA-009
STORK, D.	UCLA	FNAL-216
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STRGYNOWSKI, F.	SLAC	SLAC-E-127
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SULAK, L.	HARV	BNL-718
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SWALLOW, E.C.	CHIC	ANL-E-347
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TAKAHASHI, Y.	OSAK	FNAL-481
TAKASAKI, F.	KEK	KEK-336
TAUSCHER, L.	BASL	CERN-S-151
TAUSCHER, L.	BASL	CERN-S-158
TELEGDI, V.L.	CHIC	FNAL-226
TELEGDI, V.L.	ETHZ	CERN-NA-010
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TENNER, A.	AMST	CERN-WA-025
THOMPSON, J.A.	PITT	BNL-618
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TING, S.C.C.	MIT	BNL-658
TING, S.C.C.	?	CERN-R-804
TING, S.C.C.	MIT	BNL-669
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TRETJAKOVA, M.I.	LEBD	FNAL-463
TRETJAKOVA, M.I.	LEBD	FNAL-329
TRIANTIS, F.A.	CERN	SERP-E-077
TRIPP, R.	LBL	BNL-666
TRIPP, R.	LBL	BNL-691
TRIPP, R.D.	LBL	BNL-634
TSYGANOV, E.	JINR	FNAL-507
TURKOT, F.	FNAL	FNAL-442
UGGERHOJ, E.	AARH	CERN-S-150
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VAN GINNEKEN, A.	FNAL	FNAL-276
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VANDER VELDE, J.	MICH	FNAL-138
VENUTI, M.	RHEL	CERN-WA-024
VOYVODIC, L.	FNAL	FNAL-564
WADA, T.	OKAY	FNAL-424
WALKER, J.K.	FNAL	FNAL-284
WALKER, J.K.		FNAL-554
WALKER, T.	RHEL	RHEL-114
WALKER, W.	DUKE	SLAC-BC-067
WALKER, W.D.	DUKE	FNAL-597
WALTERS, J.	CARL	BNL-566
WANG, C.L.	BNL	BNL-664
WANG, C.L.	BNL	ANL-E-406
WATANABE, Y.	ANL	ANL-E-419
WEBER, G.	DESY	DESY-114
WEBSDALE, D.	LOIC	CERN-S-134
WEILHAMMER, P.	CERN	CERN-WA-003
WEISBERG, H.	PENN	FNAL-324
WHARTON, W.R.	CMU	BNL-692
WHITMORE, J.	MSU	FNAL-597
WICKLUND, A.B.	ANL	ANL-E-356
WICKLUND, A.B.	ANL	ANL-E-461
WICKLUND, A.B.	ANL	ANL-E-339
WIIK, B.H.	DESY	DESY-143
WIIK, B.H.	DESY	DESY-139
WILKES, R.J.	WASH	FNAL-524
WILKES, R.J.	WASH	FNAL-525
WILKES, R.J.	WASH	FNAL-387
WILLIAMS, W.H.	PENN	BNL-706
WILLIS, W.	CERN	CERN-R-806
WINSTEIN, B.	CHIC	FNAL-486
WINTER, K.	?	CERN-R-414
WINTER, K.	?	CERN-R-401
WINTER, K.	CERN	CERN-WA-018
WOJCICKI, S.	STAN	FNAL-375
WOLF, G.	DESY	DESY-PETRA-TASSO
WOLTER, H.	CRAC	FNAL-574
WOLTER, H.	CRAC	FNAL-339
WOLTER, H.	CRAC	FNAL-249
WOLTER, H.	CRAC	FNAL-508
YAMAMOTO, R.K.	MIT	FNAL-565
YAMIN, P.	RUTG	BNL-644
YEKUTIELI, G.	REHO	FNAL-295
YOKOSAWA, A.	ANL	ANL-E-433
YOON, T.S.	INTG	ANL-E-428
YUAN, L.C.L.	BNL	FNAL-427
ZELLER, M.	YALE	BNL-662
ZELLER, M.E.	YALE	BNL-702
ZICHICHI, A.	CERN	CERN-WA-044
ZOLIN, L.S.	JINR	SERP-E-121

ACCELERATOR VOCABULARY

Energies listed are approximate maximum energies of circulating beams. For colliding beam machines, only the energy of one beam is given.

For a cosmic ray experiment, we use COSM as the accelerator name.

ANL	ARGONNE (ZGS) PROTON SYNCH. (12.7 GEV)
BNL	BROOKHAVEN (AGS) PROTON SYNCH. (33 GEV)
CERN	CERN (CPS) PROTON SYNCH. (28 GEV)
CERN-ISR	CERN (ISR) PROTON-PROTON ISR (31 GEV)
CERN-SPS	SUPER PROTON SYNCHROTON AT CERN
DESY	HAMBURG DEUTCHES ELECTRON SYNCH. (7.5 GEV)
DESY-DORIS	HAMBURG (DORIS) ELECTRON-POSITRON RING (5 GEV)
DESY-PETRA	PETRA E+E- COLLIDING BEAMS
FNAL	FNAL BATAVIA PROTON SYNCH. (500 GEV)
KEK	KEK (JAPAN) PROTON ACCELERATOR (12 GEV)
RHEL	RUTHERFORD (NIMROD) PROTON SYNCH. (6 GEV)
SERP	IHEP SERPUKHOV PROTON SYNCH. (76 GEV)
SLAC	STANFORD ELECTRON LINEAR ACCEL. (22 GEV)
SLAC-PEP	SLAC POSITRON-ELECTRON PROJECT (18 GEV)
SLAC-SPEAR	STANFORD (SPEAR) ELECTRON-POSITRON RING (4.2 GEV)

DETECTOR VOCABULARY

BUBBLE CHAMBERS

For bubble chambers we use a construction such as

DBC-2M

or HBC-15FT-HYB

or HLBC-BEBC-TST.

The first element, one of

HBC
DBC
HEBC
HLBC,

tells whether the chamber fill is hydrogen, deuterium, helium, or heavy liquid. The second element gives the size or name of the chamber. Where appropriate, a third element, one of

HYB
RAP
TST,

indicates that the chamber is part of a hybrid system, or that it is rapid cycling, or that it contains a track-sensitive target.

SPECIFIC NON-BUBBLE-CHAMBER FACILITIES

We choose the detector name from this list, if possible. A facility is an apparatus which is (or will be) used for more than one experiment (with, perhaps, modifications) or which will likely produce a large number of publications.

ARGO	ARGO Spectrometer System at BNL
CBS	CERN Boson Spectrometer
CCS	Chicago Cyclotron Spectrometer at FNAL
CELLO	DESY-PETRA spectrometer system
CERN-IHEP	CERN-IHEP Boson Spectrometer at Serpukhov
CERN-MUNICH	CERN-MUNICH spectrometer at CERN

DETECTOR VOCABULARY (CONT'D)

CITF	Cal Tech-FNAL Neutrino detector system
DASP	DESY-DORIS Double Arm Spectrometer System
DELCO	SLAC-SPEAR detector system
DVMS	BNL Double Vee Magnetic Spectrometer
EMS	ANL Effective Mass Spectrometer
FGJT	Fermilab Gas Jet Target Facility
HPW	HARV-PENN-WISC neutrino detector at BNL
HPWF	HARV-PENN-WISC neutrino detector at FNAL
HRS	SLAC-PEP high resolution spectrometer
JADE	DESY-PETRA spectrometer system
LASS	SLAC Large Aperature Solenoid Spectrometer
MAC	SLAC-PEP magnetic calorimeter
MARK-J	DESY-PETRA spectrometer system
MARK-2	SLAC-SPEAR spectrometer system
MEA	Magnetic detector at ADONE
MPS	BNL Multiparticle Spectrometer
NEULAND	Reincarnated HPWF
NICE	Non-magnetic precision spectrometer at Serpukhov
OMEGA	CERN OMEGA Spectrometer
PLUTO	DESY-DORIS Superconducting Solenoid Spectrometer
RMS	Rutherford Magnetic Spectrometer Facility
SASF	Single Arm Spectrometer Facility at FNAL
SFM	CERN-ISR Split Field Magnet
SIGMA	CERN-IHEP magnetic spectrometer at Serpukhov
SLACKLSF	SLAC KL Spectrometer Facility
SMAG	SLAC-SPEAR Magnetic Detector
SMAG-LGW	SLAC-LBL SMAG with Lead Glass Wall
SPEC-6M	SERP 6-m spectrometer system
SSF	SLAC Spectrometer Facility - 1.6, 8, and/or 20 GeV
TASSO	DESY-PETRA spectrometer system
TELAS	KEK Target Embodied Large Aperature Spectrometer
TOKIWA	KEK spectrometer
TPC	SLAC-PEP time projection chamber
WAS-CISR	Wide Angle Spectrometer at the CERN-ISR
WA1	CERN-DORT-HEID-SACL-BGNA Neutrino Detector at SPS
2-GAMMA	SLAC-PEP detector to study 2-gamma process

GENERIC NON-BUBBLE CHAMBERS

We choose the single element below most closely describing the detector system used.

General:

CC	Cloud Chamber
CALO	Calorimeter
COMB	Combinations of different types of detectors. Can include a hybrid system involving a bubble chamber, if the bubble chamber is a *minor part of the system. Use only if no other name appropriate.*
EMUL	Emulsion. Also used for detectors like plastic where tracks are "frozen" in a solid medium.
OTHER	Rare non-electronic detectors (e.g., moon, ocean floor)
STRC	Streamer Chamber
TRAD	transition radiation detector

For a spectrometer system, including magnets for momentum analysis:

DAS	Double Arm Spectrometer
SAS	Single Arm Spectrometer
WAS	Wide Angle Spectrometer
SPEC	General spectrometer system not fitting one of the above or where specific type not given.

For other electronic detector systems, not including magnets for momentum analysis:

CNTR	Counters (no chambers)
OSPK	Optical spark chambers
WIRE	Wire chambers (proportional wire chambers, drift chambers). Includes all non-optical spark chambers, by convention.
SPRK	Spark chamber of unspecified type.

REACTION DATA DESCRIPTOR VOCABULARY

The data descriptors refer to the nature of the data to be taken in an experiment. Any of the variables below can also be understood to refer to functions (including averages or other moments, but not derivatives or integrals) of that variable, unless such functions involve other variables from the list. For data which are to be presented as a function of two variables, such as a scatter plot, combinations such as MASS*MASS are used.

GENERAL

CS Cross section, cross section ratio, and cross section upper limit. Can also be listed for very rare reactions whose existence is being established, even though the number of events has not been converted to a cross section. Does not include parametrizations of the cross section, e.g., as a function of energy.

ANGP Production angular distribution, i.e., of one or more of the outgoing particles relative to one of the incident particles. Includes $d\sigma/d\Omega$, $d\sigma/dt$, $d\sigma/dt'$, $d\sigma/d\Omega^2$, etc. Also the equivalent, expressed as moments or polynomial expansion coefficients. Also invariant cross section as a function of production angle or t. By convention, does not include rapidity or its approximation, $y=-ln \tan \theta/2$ (see P). Includes impact parameters and slopes of $d\sigma/dt$.

ANG Angular distribution between or among particles in the final state. Includes also angular distribution involving decay products of particles listed in the reaction, even though those decay products are not themselves explicitly listed. Includes angles used to study the decay of a system produced in the final state, even though the coordinate system axes may be defined with respect to the incident particles (e.g., Jackson angles, etc.) Also the equivalent, expressed as moments, etc.

MASS Mass spectrum, mass^2 spectrum, or invariant cross section as a function of mass or mass squared.

PT Transverse momentum (p_T) spectrum, p_T^2 spectrum, or invariant cross section as a function of p_T. Does not include momentum transfer spectrum (see ANGP). Includes transverse mass $=\sqrt{p_t^2+m^2}$, unless the particle mass (m) is also variable.

P Any function of outgoing momentum or energy not included in any of the above. Includes, E, y (rapidity, also rapidity gaps), x ($=p_{\parallel}/p^*_{max}$), $p_{\parallel}$, or other momentum or energy variable.

FV (for proposals only) Experiment proposes to measure complete four-vectors, without specifying exactly what analysis of them will be done.

AMPLITUDES

Functions linear in the amplitudes (i.e., involving the phases).

PWA Partial-wave amplitudes. Includes formation partial waves and production partial waves. Any attempt to measure amplitudes of definite j (angular momentum). Includes scattering length and effective range.

AMP Amplitude not decomposed into states of definite j. Re/Im ratio, helicity amplitude, etc.

VARIABLES RELATED TO SPIN

DME Density matrix elements, including joint density matrix elements.

POL Final state spin-1/2 polarization measurement. Includes Wolfenstein spin rotation parameters. Includes measurement of asymmetry off a polarized target when it is equal to the final state polarization.

ASYM Asymmetry in scattering off a polarized target and/or with a polarized beam (with exception of special case noted under POL).

REACTION DATA DESCRIPTOR VOCABULARY (CONT'D)

MULTIPLICITIES

MULT Multiplicity distribution, its average, ratio, or moments. Generally used in association with final states of the form N(PRONG), N(HADRON), etc., so that the individual final states are usually not listed.

EXAMPLES

DATA	DATA DESCRIPTOR
Dalitz plot	MASS*MASS or P*P
Chew-Low Plot	ANGP*MASS
Longitudinal Phase Space Plot	P*P
Peyrou Plot	PT*F
$d\sigma/du$	ANGP
$\int_0^{+\infty} E\,\frac{d^3\sigma}{dp^3}\,dp$	ANGP
$\int_0^{4\pi}\int_0^{\infty} E\,\frac{d^3\sigma}{dp^3}\,dp_T\,d\phi$	P
average outgoing γ-ray energy as a function of beam momentum.	P
$\frac{1}{\Delta y}\,\frac{1}{\pi}\,\frac{d\sigma}{dp_T^2}$, for ≥2 bins in y	P*P
$\frac{1}{\Delta m_\perp}\,\frac{1}{\pi}\,\frac{d\sigma}{dy}$, for ≥2 bins in $m_\perp$	PT*P if $m_\perp$ is a function of $p_\perp$ only P*P otherwise
$\frac{1}{\Delta\Omega^{lab}}\,\frac{E^{lab}}{(p^{lab})^2}\,\frac{d\sigma}{dp^{lab}}$, for ≥2 bins in Ω^{lab}	ANGP*P
$\frac{1}{\Delta p^{lab}}\,\frac{E^{lab}}{(p^{lab})^2}\,\frac{d\sigma}{d\Omega^{lab}}$, for ≥2 bins in p^{lab}	ANGP*P
(Y_m^{ℓ}) for ≥2 intervals in mass	ANGP*MASS
rapidity correlation contour plot	P*P

SUMMARY OF DD

DD	TYPICAL USE
CS	cross section.
ANGP	$d\sigma/dt$, $d\sigma/d\Omega$, $d\sigma/du$, dN/dt, etc.
ANG	ang. dist. between particles in final state
MASS	mass, mass^2
PT	p_T, p_T^2
P	x, y, $p_{\parallel}$, E, Δy
FV	(proposals only) four-vectors
PWA	production or formation partial-wave analysis
AMP	amplitudes not decomposed into states of definite j
DME	density matrix elements
POL	final state spin-1/2 polarization measurement
ASYM	asymmetry in scattering off polarized target
MULT	multiplicity distribution, its average or other moments

KINEMATIC VARIABLE VOCABULARY

The Beam "momentum" designation given in parentheses following the numerical value and units can be one of the following:

PLAB	beam momentum in the lab frame.
ELAB	beam energy in the lab frame.
TLAB	beam kinetic energy in the lab frame.
ECM	total energy in the CM frame.
S	total CM energy squared.

For colliding beam experiments the momentum of the second beam is given indented below that of the first. Alternatively, a single line with the total center of mass energy or equivalent lab beam momentum may be given.

For electroproduction or other reactions involving a virtual photon, the second and third lines indented below the beam momentum specify the equivalent of the mass and momentum of the virtual photon. These can have the following designations:

W	mass of the target--virtual photon system.
W2	square of W.
Q2	absolute value of the mass squared of the virtual photon = absolute value of the squared 4-momentum transfer to the electron.
NU	energy of the virtual photon in the lab frame = energy loss of the electron in the lab frame.

PARTICLE PROPERTY DESCRIPTOR VOCABULARY

The following descriptors are used to designate various types of particle property data:

MASS	Mass or mass difference
W	Total width, total rate, mean life. Also difference and ratios of these.
PW	Partial widths, partial rate, as well as any ratio or product of these such as branching ratio or integrated cross section. Also upper limits on these. Also differences of these unless included in DEC (DEC includes charge asymmetry δ for $K_L \to \pi \ell \nu$, η for $K_L \to \pi^+\pi^-$, x+iy for $K_S \to \pi^+\pi^-\pi^0$).
MOM	Electric moment, magnetic moment, charge radius, moment ratios.
DEC	Weak or electromagnetic decay parameter as defined by Review of Particle Properties, Phys. Letters 75B, No. 1, April 1978, Sec. VI:

ρ, η, ξ, δ, h, $\lvert g_A/g_V \rvert$, ϕ_{AV}, g_S, g_T, g_P	for μ decay
slopes g and slope difference σ(CP viol)	for $K \to 3\pi$
form factors f_+, f_-, f_0, λ_+, λ_-, λ_0, ξ, f_S, f_T	for $K \to \pi \ell \nu$
CP violation parameter x+iy	for $K_S \to \pi^+\pi^-\pi^0$
charge asymmetry δ	for $K_L \to \pi \ell \nu$
CP viol. parameters η_{+-}, η_{00}, ϕ_{+-}, ϕ_{00}, ϵ, ϵ'	for $K_L \to \pi\pi$
$\Delta S = \Delta Q$ parameter x	for $\bar{K}^0 \to \pi^+ \ell^- \nu$ or $K^0 \to \pi^- \ell^+ \nu$
charge asymmetry	for η decay
$\lvert g_A/g_V \rvert$, δ, α, β, γ, ϕ, Δ	for baryon decay

QN	Quantum numbers.
EX	Existence (e.g., particle search result, even if negative, or evidence for presence in a mass spectrum).

INSTITUTION VOCABULARY

Ordered by abbreviation:

AACH	PHYS. INST. DER TECH. HOCHSCHULE	AACHEN, GERMANY
AARH	AARHUS UNIV.	AARHUS, DENMARK
ABAD	ABADAN INST. OF TECHNOLOGY	ABADAN, IRAN
ABOA	ABO AKADEMI,	ABO, FINLAND
ABRN	AUBURN UNIV.	AUBURN, ALABAMA, USA
ACUS	PHYSICAL INST. OF ACAD. OF SCIENCES	MOSCOW, USSR
ADEL	ADELPHI UNIV.	GARDEN CITY, N. Y., USA
ADLD	ADELAIDE UNIV	ADELAIDE, AUSTRALIA
AECL	ATOMIC ENERGY CENTER AT LAHORE	LAHORE, INDIA
AERE	ATOMIC ENERGY RES. ESTAB.	HARWELL, BERKS., ENGLAND
AERO	AEROLAB DEVELOPMENT CO.	PASADENA, CA, USA
AFCR	AIR FORCE CAMBRIDGE RESEARCH LABS	BEDFORD, MASS., USA
AICH	AICHI EDUCATIONAL UNIV.	TOYOTA, AICHI PREF., JAPAN
AIKO	INST. KERNPHYS. ONDERZOEK	AMSTERDAM, NETHERLANDS
AKIT	AKITA UNIV.	AKITA, JAPAN
ALAH	ALABAMA UNIV AT HUNTSVILLE	HUNTSVILLE, AL, USA
ALAU	ALABAMA UNIV AT UNIVERSITY--TUSCALOOSA	UNIVERSITY, AL, USA
ALBA	STATE UNIV. OF NEW YORK AT ALBANY	ALBANY, N. Y., USA
ALBE	ALBERTA UNIV., NRC	EDMONTON, ALB. CANADA
ALIG	ALIGARH MUSLIM UNIV	ALIGARH, INDIA
ALLA	ALLAHABAD UNIV.	ALLAHABAD, INDIA
ALLG	COMMUNITY COLLEGE OF ALLEGHENY COUNTY	PITTSBURGH, PA, USA
ALMA	KAZAKH INST. FOR HIGH ENERGY PHYS.	ALMA-ATA, USSR
AMER	AMERICAN UNIV.	WASHINGTON DC, USA
AMES	AMES LAB	AMES, IOWA, USA
AMMC	ACADEMY OF MINING AND METALLURGY	CRACOW, POLAND
AMST	UNIV. OF AMSTERDAM	AMSTERDAM, NETHERLANDS
ANDE	ANDES UNIV.	BOGOTA, COLOMBIA
ANIK	AMSTERDAM NIKHEF	AMSTERDAM, NETHERLANDS
ANKA	MIDDLE EAST TECHNICAL UNIV.	ANKARA, TURKEY
ANL	ARGONNE NAT. LAB.	ARGONNE, ILL., USA
ANPL	ATHENS UNIV., NUCL. PHYS. LAB.	ATHENS, GREECE
ANTW	RIJKSUNIVERSITAIR CENTRUM	ANTWERP, BELGIUM
ANUC	AUSTRALIAN NATIONAL UNIV. AT CANBERRA	CANBERRA, AUSTRALIA
AOYA	AOYAMA GAKNIN UNIV.	TOKYO, JAPAN
ARIZ	UNIV. OF ARIZONA	TUCSON, ARIZ., USA
ARZS	ARIZONA STATE UNIV	TEMPE, AZ, USA
ASHI	ASHIKAGA INST. TECHNOLOGY	ASHIKAGA, JAPAN
ATCH	ADVANCED TECH. CENTER	ARLINGTON, TX, USA
ATEN	NUCLEAR RES. CENTRE DEMOKRITOS	ATHENS, GREECE
AUCK	AUCKLAND UNIV.	AUCKLAND, NEW ZEALAND
AWRE	ATOMIC WEAPONS RESEARCH ESTABLISHMENT	ALDERMASTON, ENGLAND
AZER	AZERBAYDZHAN S.M.KIROV STATE UNIV.	BAKU, USSR
BAGN	OBS. DU PIC DU MIDI	BAGNERES-DE-BIGORRE, FRANCE
BAIR	NATIONAL COMM. ATOMIC ENERGY	BUENOS AIRES, ARG
BARC	UNIV. AUTONOMA DE BARCELONA	BARCELONA, SPAIN
BARI	UNIV. DI BARI	BARI, ITALY
BART	BARTOL RESEARCH FOUNDATION	SWARTHMORE, PENN.
BASL	BASLE UNIV.	BASLE, SWITZERLAND
BC	BOSTON COLLEGE	CHESNUT HILL, MA, USA
BEDF	BEDFORD COLLEGE	LONDON, ENGLAND
BELG	INST. INTERUNIV. DES SCI. NUC.	BRUXELLES, BELGIUM
BELL	BELLCOMM INC.	WASHINGTON DC, USA
BERG	FYSISK INSTITUTT	BERGEN, NORWAY
BERL	INST. HOCHENERGIEPHYS. DAW	ZEUTHEN/BERLIN, DDR
BERN	UNIV. BERN	BERN, SWITZERLAND
BGNA	UNIV. DI BOLOGNA	BOLOGNA, ITALY
BHUB	BHUBANESWAR PHYS. INST.	BHUBANESWAR, INDIA
BIEL	UNIV. BIELEFELD	BIELEFELD, GERMANY
BIIT	INDIAN INST. OF TECHNOLOGY	BOMBAY, INDIA
BING	STATE UNIV. OF NEW YORK AT BINGHAMTON	BINGHAMTON, N. Y., USA
BIRM	BIRMINGHAM UNIV.	BIRMINGHAM, ENGLAND
BNL	BROOKHAVEN NATIONAL LAB.	UPTON, L.I., N. Y., USA
BOHR	NIELS BOHR INSTITUTE	COPENHAGEN, DENMARK
BOIS	BOISE STATE U.	BOISE, IDAHO, USA

INSTITUTION VOCABULARY (CONT'D)

BOMB	BOMBAY UNIV.	BOMBAY, INDIA
BONN	UNIV. BONN	BONN, GERMANY
BORD	BORDEAUX UNIV.	GRADIGNAN, FRANCE
BOST	BOSTON UNIV.	BOSTON, MASS., USA
BPOL	POLYTECHNIC INST. OF BROOKLYN	BROOKLYN, NY, USA
BRAN	BRANDEIS UNIV.	WALTHAM, MASS., USA
BRAT	INST. OF PHYSICS, UNIV. BRATISLAVA	BRATISLAVA, CZECHOSLOVAKIA
BRCO	BRITISH COLUMBIA UNIV.	VANCOUVER, CANADA
BRES	UNIVERSITA CATTAOLICA DI BRESCIA	BRESCIA, ITALY
BRIG	BRIGHAM YOUNG UNIV.	PROVO, UT, USA
BRIS	H. H. WILLS PHYS. LAB., U. OF BRISTOL	BRISTOL, ENGLAND
BRKC	BROOKLYN COLLEGE	BROOKLYN, NY, USA
BRKP	STATE UNIV. OF NEW YORK COLL. AT BROCKPORT	BROCKPORT, NY, USA
BROW	BROWN UNIV.	PROVIDENCE, R. I., USA
BRUX	UNIV. LIBRE DE BRUXELLES	BRUXELLES, BELGIUM
BRUY	CEA DE BRUYERES-LE-CHATEL	MONTROUGE, FRANCE
BSSL	BERKELEY SPACE SCI. LAB, UCB	BERKELEY, CA, USA
BUCH	BUCHAREST STATE UNIV.	BUCHAREST, ROMANIA
BUDA	CENTRAL RESEARCH INSTITUTE OF PHYSICS	BUDAPEST, HUNGARY
BUFF	STATE UNIV. OF NEW YORK AT BUFFALO	BUFFALO, N. Y., USA
BUND	PHYS-TECH BUNDESANSTALT	BRUNSWICK, W.GERMANY
CAEN	LAB. DE PHYS. CORPUSCULAIRE	CAEN, FRANCE
CALG	CALGARY UNIV.	CALGARY, ALB., CANADA
CAMB	CAMBRIDGE UNIV.	CAMBRIDGE, ENGLAND
CAMP	UNIV.OF CAMPINAS	SAO PAULO, BRAZIL
CARL	CARLTON UNIV.	OTTAWA, CANADA
CASE	CASE WESTERN RESERVE UNIV.	CLEVELAND, OHIO, USA
CATA	CATANIA UNIV.	CATANIA, ITALY
CATH	CATHOLIC UNIV. OF AMERICA	WASHINGTON DC, USA
CAVE	CAVENDISH LAB., CAMBRIDGE UNIV.	CAMBRIDGE, ENGLAND
CDEF	COLLEGE DE FRANCE	PARIS, FRANCE
CEA	CAMBRIDGE ELECTRON ACCEL.	CAMBRIDGE, MASS., USA
CENG	CEN, GRENOBLE	GRENOBLE, FRANCE
CERN	EUROPEAN ORG. FOR NUC. RES.	GENEVA, SWITZERLAND
CEYL	CEYLON UNIV	COLOMBO, CEYLON
CHAR	CHARLES UNIV.	PRAGUE, CZECHOSLOVAKIA
CHIC	UNIV. OF CHICAGO	CHICAGO, ILL., USA
CHTI	CZECH. HIGHER TECH. INST. AT PRAGUE	PRAGUE, CZECHOSLOVAKIA
CHUB	CHUBU INST. TECH.	NAGOYA, JAPAN
CHUO	CHUO UNIV.	TOKYO, JAPAN
CINC	UNIV. OF CINCINNATI	CINCINNATI, OHIO, USA
CIOW	CARNEGIE INST. OF WASHINGTON	WASHINGTON, D.C., USA
CIPP	CANADIAN INST. OF PARTICLE PHYS.	MONTREAL, CANADA
CISI	INDIAN STATISTICAL INST.	CALCUTTA, INDIA
CIT	CALIF. INSTITUTE OF TECHNOLOGY	PASADENA, CALIF., USA
CLBR	CALABRIA UNIV	CALABRIA, ITALY
CLER	UNIV. DE CLERMONT-FERRAND	CLERMONT-FERRAND, FRANCE
CLRK	CLARKSON COLL. OF TECH.	POTSDAM, NY, USA
CMNS	COMENIUS UNIV.	BRATISLAVA, CZECHOSLOVAKIA
CMU	CARNEGIE-MELLON UNIV.	PITTSBURGH, PA., USA
CNRC	CANADIAN NATIONAL RESEARCH COUNCIL	OTTAWA, CANADA
COLO	UNIV. OF COLORADO	BOULDER, COLO., USA
COLU	COLUMBIA UNIV.	NEW YORK, N. Y., USA
CONC	CONCORDIA TEACHER'S COLL.	RIVER FOREST, IL, USA
COPE	COPENHAGEN UNIV	COPENHAGEN, DENMARK
CORN	CORNELL UNIV.	ITHACA, N. Y., USA
COSI	COSICE UNIV.	COSICE, CZECHOSLOVAKIA
COSU	COLORADO STATE UNIV.	FORT COLLINS, COLO., USA
COTT	COTTON COLLEGE	GAUHATI, INDIA
COUN	THE COOPER UNION	NEW YORK, N. Y., USA
CRAC	INST. FOR NUCLEAR RESEARCH	CRACOW, POLAND
CRNL	CHALK RIVER NUCLEAR LABORATORIES	CHALK RIVER, CANADA
CUNY	CITY UNIV. OF NEW YORK	NEW YORK, N. Y., USA
CURI	PIERRE ET MARIE CURIE UNIV.	PARIS, FRANCE
CUZA	AL.I.CUZA UNIV.	ISAI, ROMANIA
DACC	ATOMIC ENERGY CENTRE	DACCA, BANGLADESH
DAEC	DANISH ATOMIC ENERGY COMMISION	RISOE, DENMARK

DARE	DARESBURY NUC. PHYS. LAB.	DARESBURY, ENGLAND
DARM	TECHNISCHE UNIV., DARMSTADT	DARMSTADT, GERMANY
DART	DARTMOUTH COLLEGE	HANOVER, N. H., USA
DECC	DENVER COMMUNITY COLLEGE	DENVER, COLO., USA
DELH	UNIV. OF DELHI	DELHI, INDIA
DESY	DEUTSCHES ELEKTRONEN-SYNCH.	HAMBURG, GERMANY
DGSI	DARMSTADT-GSI, HEAVY ION	DARMSTADT, GERMANY
DIBR	DIBRUGARH UNIV	DIBRUGARH, INDIA
DLFT	TECHNISCHE HOGESCHOOL	DELFT, NETHERLANDS
DORT	UNIV. DORTMUND	DORTMUND-HORNBRUCH, GERMANY
DSRL	DUPONT AND CO., SAVANNAH RIVER LAB.	AIKEN, S.C., USA
DUBT	COLLEGE OF TECHNOLOGY, DUBLIN	DUBLIN, IRELAND
DUKE	DUKE UNIV.	DURHAM, N. C., USA
DURG	REGIONAL ENGINEERING COLL	DURGAPUR, INDIA
DURH	UNIV. OF DURHAM	DURHAM, ENGLAND
DUSH	ACAD. OF SCI. TAJIK	DUSHANBE, TAJIK, USSR
DUUC	UNIVERSITY COLLEGE	DUBLIN, IRELAND
EAEC	EUROPEAN ATOMIC ENERGY COMMISSION	BRUSSELS, BELGIUM
EDIN	UNIV. OF EDINBURGH	EDINBURGH, SCOTLAND
EFI	ENRICO FERMI INST. FOR NUCL. STUDIES	CHICAGO, ILL., USA
EHIM	EHIME UNIV	EHIME-KEN, JAPAN
ELMT	ELMHURST COLLEGE	ELMHURST, I., USA
EMMA	EMMANUEL COLLEGE	BOSTON, MASS., USA
ENSP	ECOLE NORMALE SUPERIEURE	PARIS, FRANCE
EOTV	ROLAND EOTVOS UNIV	BUDAPEST, HUNGARY
EPOL	ECOLE POLYTECHNIQUE	PALAISEAU FRANCE
EREV	STATE ATOMIC ENERGY COMM. AT YEREVAN	YEREVAN, USSR
ERLA	UNIV. ERLANGEN	ERLANGEN, GERMANY
ESTA	ESTADUAL UNIV.	CAMPINAS, BRAZIL
ETHZ	SWISS FEDERAL INST. OF TECHNOLOGY	ZURICH, SWITZERLAND
EWAS	EASTERN WASHINGTON STATE COLL.	CHENEY, WASH., USA
EXET	EXETER UNIV	EXETER, ENGLAND
FAIR	FAIRHAVEN COLLEGE	BELLINGHAM, WASH., USA
FIRZ	UNIV. DI FIRENZE	FIRENZE, ITALY
FISK	FISK UNIV.	NASHVILLE, TENN., USA
FLOR	UNIV. OF FLORIDA	GAINSVILLE, FLA., USA
FNAL	FERMI NATIONAL ACCELERATOR LAB.	BATAVIA, ILL., USA
FOM	FOUN. FOR FUNDAMENTAL RESEARCH ON MATTER	UTRECHT, NETHERLANDS
FRAS	LAB. NAZIONALI DEL SINCROTRONE	FRASCATI, ITALY
FREB	FREIE UNIV. BERLIN	BERLIN, GERMANY
FREI	UNIV. FREIBURG	FREIBURG, GERMANY
FRIB	UNIV. DE FRIBOURG	FRIBOURG, SWITZERLAND
FSU	FLORIDA STATE UNIV.	TALLAHASSEE, FLA., USA
FUIT	FUKUOKA INST TECH.	FUKUOKA, JAPAN
FUKU	FUKUSHIMA UNIV.	FUKUSHIMA, JAPAN
GAEC	GRUMMAN AIRCRAFT ENGINEERING CORP	BETHPAGE, NY, USA
GAUH	GAUHATI UNIV.	GAUHATI, INDIA
GAYA	GAYA COLL. OF MAGADH UNIV.	GAYA, BIHAR, INDIA
GEEL	EURATOM AT GEEL	GEEL, BELGIUM
GENO	UNIV. DI GENOVA	GENOVA, ITALY
GEOR	UNIV. OF GEORGIA	ATHENS, GA, USA
GESC	GENERAL ELECTRIC R AND D CENTER	SCHENECTADY, N. Y., USA
GEVA	UNIV. DE GENEVE	GENEVA, SWITZERLAND
GHEN	GHENT RIJKSUNIVERSTEIT	GHENT, NETHERLANDS
GHNA	GHANA UNIV.	LEGON, GHANA
GLAS	UNIV. OF GLASGOW	GLASGOW, SCOTLAND
GLPH	GUELPH UNIV	GUELPH, ONT., CANADA
GOME	GOMEL STATE UNIV.	GOMEL, BYELORUSSIAN, USSR
GOTE	CHALMERS UNIV., INST. OF THEOR. PHYS.	GOTEBORG, SWEDEN
GRAZ	UNIV. GRAZ	GRAZ, AUSTRIA
GREN	GRENOBLE UNIV.	GRENOBLE, FRANCE
GRON	GRONINGEN RIJKSUNIVERSITEIT	GRONINGEN, NETHERLANDS
GRUM	GRUMMAN AEROSPACE CORP.	BETHPAGE, N. Y., USA
GSCO	GEOLOGICAL SURVEY OF CANADA	OTTAWA, CANADA
GUIL	UNIV. OF SURREY AT GUILFORD	GUILFORD, SURREY, ENGLAND
GWU	GEORGE WASHINGTON UNIV.	WASHINGTON, DC, USA
HAIF	TECHNION - ISRAEL INST. OF TECHNOLOGY	HAIFA, ISRAEL

INSTITUTION VOCABULARY (CONT'D)

HALT	HIGH ALT. OBS., NATL CENT. FOR ATMOS. RES.	BOULDER, CO, USA
HAMB	UNIV. HAMBURG	HAMBURG, GERMANY
HANO	HANOI UNIV.	HANOI, VIETNAM
HARV	HARVARD UNIV.	CAMBRIDGE, MASS., USA
HASL	HEALTH AND SAFETY LAB	NEW YORK, N. Y., USA
HAWA	UNIV. OF HAWAII	HONOLULU, HAWAII, USA
HEID	UNIV. HEIDELBERG	HEIDELBERG, GERMANY
HELS	HELSINGIN YLIOPISTO	HELSINKI, FINLAND
HIGA	HIGASHICHIKUSHI JR COLL.	KITAKYUSHU, FUKUOKA, JAPAN
HIME	HIMEJI INST. OF TECH.	HYOGO, JAPAN
HIRO	HIROSHIMA UNIV.	HIROSHIMA, JAPAN
HOKK	HOKKAIDO UNIV.	SAPPORO, JAPAN
HOLY	HOLY CROSS COLLEGE	WORCESTER, MA, USA
HONG	HONG KONG UNIV	HONG KONG
HOUS	UNIV. OF HOUSTON	HOUSTON, TEXAS, USA
HRSK	HIROSAKI UNIV.	HIROSAKI, JAPAN
HUMB	HUMBOLDT UNIV	BERLIN, E.GERMANY
IACS	INDIAN ASSOC. FOR THE CULTIVATION OF SCI.	CALCUTTA, INDIA
IASD	INST. FOR ADVANCED STUDIES AT DUBLIN	DUBLIN, IRELAND
IBAD	IBADAN UNIV.	IBADAN, NIGERIA
IBAR	IBARAKI UNIV	MITO-SHI, JAPAN
IBM	INTERNATIONAL BUSINESS MACHINES, INC.	PALO ALTO, CALIF., USA
ICUT	INTERNATIONAL CHRISTIAN UNIV. AT TOKYO	TOKYO, JAPAN
IDAH	UNIV. OF IDAHO	MOSCOW, ID, USA
IFA	INST. FOR ATOMIC PHYSICS	BUCHAREST, ROMANIA
IFE	UNIVERSITY OF IFE	ILE-IFE, NIGERIA
IIT	ILLINOIS INST. OF TECH.	CHICAGO, ILL., USA
ILL	UNIV. OF ILLINOIS	URBANA, ILL., USA
ILLC	UNIV. OF ILLINOIS AT CHICAGO	CHICAGO, ILL., USA
ILLG	INST. LAUE-LANGEVIN	GRENOBLE, FRANCE
IND	UNIV. OF INDIANA	BLOOMINGTON, IND., USA
INNP	INST. FOR NUCL. PROBLEMS, ACAD. OF SCI.	MOSCOW, USSR
INNS	INNSBRUCK UNIV.	INNSBRUCK, AUSTRIA
INUS	INST. FOR NUCLEAR STUDY AT TOKYO UNIV.	TOKYO, JAPAN
IOAN	UNIV. OF IOANNINA	IOANNINA, GREECE
IOFF	IOFFE INST. OF PHYS. AND TECH.	LENINGRAD, USSR
IOWA	UNIV. OF IOWA	IOWA CITY, IOWA, USA
IPB	INSTITUTUL POLITEHNIC	BUCHAREST, ROMANIA
IPN	INST. DE PHYS. NUCLEAIRE	ORSAY, FRANCE
IPNP	INSTITUT DE PHYSIQUE NUCLEAIRE	PARIS, FRANCE
IRAD	INSTITUTE DU RADIUM	PARIS, FRANCE
ISSP	SOLID STATE PHYS. INST., UNIV. OF TOKYO	TOKYO, JAPAN
ISU	IOWA STATE UNIV.	AMES, IOWA, USA
ITEP	INST. FOR TEOR. AND EXP. PHYS.	MOSCOW, USSR
ITHA	ITHACA COLLEGE	ITHACA, N.Y., USA
IUPP	INT. UNION OF PURE AND APPLIED PHYS.	LONDON, ENGLAND
IUPU	INDIANA U. - PURDUE U. AT INDIANAPOLIS	INDIANAPOLIS, IND., USA
JADA	JADAVPUR UNIV.	CALCUTTA, INDIA
JAGL	JAGELLONIAN UNIV	CRACOW, POLAND
JAMU	JAMMU UNIV.	JAMMU-TAWI, INDIA
JERS	JERSEY CITY STATE COLL.	JERSEY CITY, NJ
JHU	JOHNS HOPKINS UNIV.	BALTIMORE, MD., USA
JICS	JADAVPUR IND. ASSOC. CULTIV SCI.	CALCUTTA, INDIA
JINR	JOINT INST. FOR NUCL. RESEARCH	DUBNA, USSR
JODH	JODHPUR UNIV.	JODHPUR, RAJASTHAN, INDIA
JSWN	JAPAN UNIV. OF SOCIAL WELFARE	NAGOYA, JAPAN
KABA	KABARDINO-BALKARIAN STATE UNIV.	NALCHIK, USSR
KAIS	KAISERSLAUTERN UNIV	KAISERSLAUTERN, GERMANY
KALY	KALYANI UNIV.	KALYANI, INDIA
KANP	INDIAN INST. TECH.	KANPUR, INDIA
KANS	UNIV. OF KANSAS	LAWRENCE, KANSAS, USA
KARL	TECHNISCHE UNIV. KARLSRUHE	KARLSRUHE, GERMANY
KAZA	PHYSICAL-TECHNICAL INST.	KAZAN, USSR
KEK	NAT. LAB FOR HIGH ENERGY PHYS., JAPAN	TSUKUBA-GUN, JAPAN
KENT	KENT UNIV. AT CANTEBURY, KENT	CANTEBURY, ENGLAND
KFAJ	KFA JULICH	JULICH, GERMANY
KFZK	KERNFORSCHUNGSZENTRUM, KARLSRUHE	LEOPOLDSHAVEN, GERMANY

INSTITUTION VOCABULARY (CONT'D)

KHAB	FAR EAST SCIENCE CENTER	KHABAROVSK, USSR
KHAR	PHYSICO-TECH. INST., ACAD. SCI., UKR.SSR	KHARKOV, USSR
KHLP	KHLOPIN RADIUM INST.	LENINGRAD, USSR
KHSU	KHARKOV STATE UNIV.	KHARKOV, USSR
KIAE	KURCHATOV INST. OF ATOMIC ENERGY	MOSCOW, USSR
KIDR	BORIS KIDRIC INST. NUC. SCI.	BELGRADE, YUGOSLAVIA
KIEL	KIEL UNIV.	KIEL, GERMANY
KIEV	PHYSICAL-TECHNICAL INST.	KIEV, USSR
KINI	KINKI UNIV.	IIZUKA, JAPAN
KINK	KINKI UNIV.	OSAKA, JAPAN
KIRT	KIRTLAND AIR FORCE BASE	ALBUQUERQUE, NM, USA
KISH	INST.APP.PHYS. ACAD. SCI	KISHINEV, MOLDAVIA, USSR
KMUL	KARL MARX UNIV.	LEIPZIG, DDR
KNGA	KANAGAWA UNIV	YOKOHAMA, JAPAN
KNIJ	KATHOLIEKE UNIV. NIJMEGEN	NIJMEGEN, NETHERLANDS
KNTY	UNIV. OF KENTUCKY	LEXINGTON, KY., USA
KNZW	KANAZAWA UNIV	KANAZAWA, JAPAN
KOBE	KOBE UNIV.	KOBE, JAPAN
KOCH	KOCHI UNIV	KOCHI, JAPAN
KONA	KONAN UNIV.	KOBE, JAPAN
KOSI	CZECH. ACAD. SCI. AT KOSICE	KOSICE, CZECHOSLOVAKIA
KOSU	PAVLA J. SAFARIKA UNIV.	KOSICE, CZECHOSLOVAKIA
KSAN	KYUSHU SANGYO UNIV.	KITAKYUSHU, FUKUOKA, JAPAN
KSUA	KAZAKH STATE UNIV.	ALMA-ATA, USSR
KSUM	KANSAS STATE UNIV	MANHATTEN, KS, USA
KURU	KURUKSHETRA UNIV.	INDIA
KWAN	KWANSAI GAKUIN UNIV	HYOGO-KEN, JAPAN
KYOT	KYOTO UNIV.	KYOTO, JAPAN
KYUS	KYUSHU UNIV.	FUKUOKA, JAPAN
LALO	LINEAR ACCELERATOR LAB, ORSAY	ORSAY, FRANCE
LANC	LANCASTER UNIV.	LANCASTER, ENGLAND
LAND	LANDAU INST. THEOR. PHYS	MOSCOW, USSR
LANG	LANGUEDOC UNIV.	MONTPELLIER, FRANCE
LAPP	LAPP UNIV.	ANNECY, FRANCE
LAPZ	UNIV. MAYOR DE SAN ANDRES	LA PAZ, ARGENTINA
LASL	U. C. LOS ALAMOS SCIENTIFIC LAB.	LOS ALAMOS, N. M., USA
LASU	LOS ANGELES STATE UNIV	LOS ANGELES, CA, USA
LAUS	UNIV. OF LAUSANNE	LAUSANNE, SWITZERLAND
LAVL	LAVAL UNIV.	QUEBEC, CANADA
LBL	U. C. LAWRENCE BERKELEY LAB.	BERKELEY, CALIF., USA
LEBD	LEBEDEV PHYSICS INST.	MOSCOW, USSR
LEED	LEEDS UNIV.	LEEDS, ENGLAND
LEHI	LEHIGH UNIV.	BETHLEHEM, PA., USA
LEID	INST. LORENTZ	LEIDEN, NETHERLANDS
LENI	INST. OF NUCL. PHYS., AKAD. NAUK USSR	LENINGRAD, USSR
LENP	LENINGRAD KALININ POLYTECHNIC INST.	LENINGRAD, USSR
LENU	LENINGRAD UNIV.	LENINGRAD, USSR
LEUV	LEUVEN UNIV	HEVERLEE, BELGIUM
LIBH	LAB INTERUNIV. BELGE HIGH ENG.	BRUSSELS, BELGIUM
LIEG	LIEGE UNIV.	LIEGE, BELGIUM
LINZ	LINZ INSTITUT FUR PHYSIK, KEPLER HOCH.	LINZ, AUSTRIA
LIPS	DAVID LIPSCOMB COLL.	NASHVILLE, TENN. USA
LIVP	LIVERPOOL UNIV.	LIVERPOOL, ENGLAND
LLL	LAWRENCE LIVERMORE LAB	LIVERMORE, CALIF., USA
LOCK	LOCKHEAD PALO ALTO RESEARCH LAB	PALO ALTO, CA, USA
LODZ	LODZ UNIV.	LODZ, POLAND
LOGN	UTAH STATE UNIV. AT LOGAN	LOGAN, UTAH, USA
LOIC	IMPERIAL COL. OF SCI. AND TECH.	LONDON, ENGLAND
LOKC	KING'S COLLEGE	LONDON, ENGLAND
LOQM	QUEEN MARY COLLEGE	LONDON, ENGLAND
LOUC	UNIVERSITY COLLEGE	LONDON, ENGLAND
LOUG	LOUGHBOROUGH UNIV. OF TECHNOLOGY	LOUGHBOROUGH, ENGLAND
LOWC	WESTFIELD COLLEGE	LONDON, ENGLAND
LPGP	LAB. DE PHYS. GENERAL, UNIV. PARIS	PARIS, FRANCE
LPNP	LAB. DE PHYS. NUCL. ET HAUTES ENERGIES	PARIS, FRANCE
LPTH	PARIS UNIV VII, LPTHE	PARIS, FRANCE
LRC	LEWIS RESEARCH CENTER, NASA	CLEVELAND, OHIO, USA

INSTITUTION VOCABULARY (CONT'D)

LSBF	LISBON INST. FISICA	LISBON, PORTUGAL
LSU	LOUISIANA STATE UNIV.	BATON ROUGE, LA., USA
LUMI	CENTRE UNIV. DE LUMINY	MARSEILLE, FRANCE
LUND	LUND UNIV.	LUND, SWEDEN
LVLN	UNIV. CATHOLIQUE DE LOUVAIN	LOUVAIN-LA-NEUVE, BELG.
LYON	INST. DE PHYS. NUCL., UNIV. DE LYON	VILLEURBANNE, FRANCE
MADR	JUNTA DE ENERGIA NUCLEAR	MADRID, SPAIN
MAEC	STATE ATOMIC ENERGY COMMITTEE	MOSCOW, USSR
MAIN	MAINE UNIV.	ORONO, ME, USA
MANH	MANHATTAN COLLEGE	NEW YORK, N. Y., USA
MANI	UNIV. OF MANITOBA	WINNIPEG, CANADA
MANZ	UNIV. MAINZ	MAINZ, GERMANY
MARB	MARBURG UNIV.	MARBURG/LAHN, GERMANY
MARS	CENTRE NATIONAL DE LA RECHERCHE SCI.	MARSEILLE, FRANCE
MASA	UNIV. OF MASSACHUSETTS	AMHERST, MASS., USA
MASB	UNIV. OF MASSACHUSETTS	BOSTON, MASS., USA
MATS	MATSCIENCE	MADRAS, INDIA
MCGI	MCGILL UNIV.	MONTREAL, CANADA
MCHS	UNIV. MANCHESTER	MANCHESTER, ENGLAND
MDRU	MADRAS UNIV., GUINDY	MADRAS, INDIA
MEIS	MEISEI UNIV	TOKYO, JAPAN
MELB	UNIV. OF MELBOURNE	PARKVILLE, AUSTRALIA
MEXI	NACIONAL INSTITUTO POLITECNICO	MEXICO CITY, MEXICO
MEXU	UNIV NAC. AUTONOMA DE MEXICO	MEXICO CITY, MEXICO
MICH	UNIV. OF MICHIGAN	ANN ARBOR, MICH., USA
MICR	INST. FOR COSMIC RESEARCH	MOSCOW, USSR
MILA	UNIV. DI MILANO	MILANO, ITALY
MIM	MOSCOW INST. OF MATHEMATICS	MOSCOW, USSR
MINN	UNIV. OF MINNESOTA	MINNEAPOLIS, MINN., USA
MINR	INSTITUTE FOR NUCLEAR RESEARCH	MOSCOW, USSR
MINS	ACAD. OF SCI. BYELORUSSIAN	MINSK, BYEL., USSR
MIOH	MIAMI UNIV.	OXFORD, OHIO, USA
MIRA	INTL. CENTER FOR THEO. PHYS., MIRAMARE	TRIESTE, ITALY
MISR	INST FOR SPACE RESEARCH	MOSCOW, USSR
MISS	MISSISSIPPI UNIV.	UNIVERSITY, MISS. USA
MISU	MISSISSIPPI STATE UNIV.	STATE COLLEGE, MISS, USA
MIT	MASSACHUSETTS INST. OF TECHNOLOGY	CAMBRIDGE, MASS., USA
MMST	MCMASTER UNIV.	HAMILTON, ONT. CANADA
MODE	ISTITUTO DI FISICA DELLA UNIVERSITA	MODENA, ITALY
MONS	UNIV. DE L'ETAT, MONS	MONS, BELGIUM
MONT	MONTREAL UNIV	MONTREAL, QUE., CANADA
MOSU	MOSCOW STATE UNIV. INST. OF NUCL. PHYS.	MOSCOW, USSR
MPCM	MAX-PLANCK-INSTITUT FUER CHEMIE	MAINZ, GERMANY
MPEI	MOSCOW PHYS. ENG. INST.	MOSCOW, USSR
MPIG	MAX-PLANCK-INST. FUR PHYS.-ASTROPHYS.	GARCHING, GERMANY
MPIH	MAX-PLANCK-INST. FUR PHYS.-ASTROPHYS.	HEIDELBERG, GERMANY
MPIM	MAX-PLANCK-INST. FUR PHYS.-ASTROPHYS.	MUNICH, GERMANY
MPTI	MOSCOW PHYSICAL-TECHNICAL INST.	MOSCOW, USSR
MSCC	NASA MANNED SPACECRAFT CENTER	HOUSTON, TEXAS, USA
MSNA	INS. DI FISICA DELL UNIV.	MESSINA, ITALY
MSU	MICHIGAN STATE UNIV.	EAST LANSING, MICH., USA
MTHO	MT. HOLYOKE COLLEGE	SOUTH HADLEY, MASS., USA
MTPL	MICHIGAN UNIV. AT MT. PLEASANT	MT. PLEASANT, MI, USA
MUDD	HARVEY MUDD COLLEGE	CLAREMONT, CALIF., USA
MULH	CENTRE UNIV. DU HAUT-RHIN	MULHOUSE, FRANCE
MUNI	MUNICH UNIV.	MUNICH, GERMANY
MUNT	TECHNISCHE UNIVERSITAT MUNICH	MUNICH, GERMANY
MURA	MIDWESTERN UNIV. RESEARCH ASSOC.	STROUGHTON, WI, USA
NAGO	NAGOYA UNIV.	NAGOYA, JAPAN
NAME	NASA AMES RESEARCH CENTER	MOFFETT FIELD, CA, USA
NANC	UNIV. DE NANCY	NANCY, FRANCE
NANY	NANYANG UNIV.	SINGAPORE, SINGAPORE
NAPL	UNIV. DI NAPOLI	NAPOLI, ITALY
NARA	NARA WOMEN'S UNIV.	NARA, JAPAN
NASA	NASA, GODDARD	GREENBELT, MD, USA
NASL	NASA, LEWIS	CLEVELAND, OH, USA
NBNG	NORTH BENGAL UNIV.	RAJARAMMOHUNPUR, INDIA

INSTITUTION VOCABULARY (CONT'D)

NBS	NATIONAL BUREAU OF STANDARDS	WASHINGTON DC, USA
NDAM	UNIV. OF NOTRE DAME	NOTRE DAME, IND., USA
NDIT	NEW DELHI INST. OF TECHNOLOGY	DELHI, INDIA
NEAS	NORTHEASTERN UNIV.	BOSTON, MASS., USA
NEBR	UNIV. OF NEBRASKA	LINCOLN, NEBR., USA
NEUC	UNIV. OF NEUCHATEL	NEUCHATEL, SWITZERLAND
NEVI	NEVIS LAB.	IRVINGTON-ON-HUDSON, N.Y., USA
NFLD	NEWFOUNDLAND UNIV	ST. JOHNS, NFLD, CANADA
NGNY	NASA, GODDARD INST.	NEW YORK, NY, USA
NHMP	NEW HAMPSHIRE UNIV	DURHAM, NH, USA
NICE	NICE UNIV.	NICE, FRANCE
NIFS	IST. DI FIS. SPERIMENTALE	NAPOLI, ITALY
NIHN	NIHON UNIV	TOKYO, JAPAN
NIJM	R. K. UNIV. NIJMEGEN	NIJMEGEN, NETHERLANDS
NILU	NORTHERN ILLINOIS UNIV.	DEKALB, ILL., USA
NORD	NORDISK INS. FOR TEOR. ATOMFYS.	COPENHAGEN, DENMARK
NOTT	NOTTINGHAM UNIV.	NOTTINGHAM, ENGLAND
NOVO	INST. OF NUCL. PHYS.	NOVOSIBIRSK, USSR
NPOL	NORTHERN POLYTECHNIC	LONDON, ENGLAND
NRL	NAVAL RESEARCH LABORATORY	WASHINGTON, D.C., USA
NSF	NATIONAL SCIENCE FOUNDATION	WASHINGTON, D.C., USA
NTUA	NATL. TECH. UNIV. OF ATHENS	ATHENS, GREECE
NWES	NORTHWESTERN UNIV.	EVANSTON, ILL., USA
NYMC	NEW YORK MEDICAL COLL.	NEW YORK, N. Y., USA
NYU	NEW YORK UNIV.	NEW YORK, N. Y., USA
OBER	OBERLIN COLLEGE	OBERLIN, OHIO, USA
OBNI	ATOMIC RESEARCH CENTER	OBNINSK, USSR
OENS	ORSAY, ECOLE NORMALE SUPERIEURE	ORSAY, FRANCE
OHIO	OHIO UNIV.	ATHENS, OHIO, USA
OKAY	OKAYAMA UNIV	OKAYAMA, JAPAN
OKLN	OKLAHOMA UNIV	NORMAN, OK, USA
OPEN	OPEN UNIV	MILTON KEYNES, ENGLAND
ORME	LAB DE PHYS. THEOR. ET H.ENERGIES	ORSAY, FRANCE
OREC	OREGON STATE UNIV	CORVALLIS, ORE, USA
OREG	UNIV. OF OREGON	EUGENE, ORE., USA
ORLE	LAB DE PHYS., ORLEANS	ORLEANS, FRANCE
ORNL	OAK RIDGE NATIONAL LAB.	OAK RIDGE, TENN., USA
ORSA	UNIV. DE PARIS, FAC. DES SCI.	ORSAY, FRANCE
OSAK	OSAKA UNIV.	OSAKA, JAPAN
OSKC	OSAKA CITY UNIV.	OSAKA, JAPAN
OSLO	OSLO UNIV.	OSLO, NORWAY
OSMA	OSMANIA UNIV.	HYDERABAD, INDIA
OSSE	SCI. EDUC. INST. OF OSAKA PREF.	OSAKA, JAPAN
OSU	OHIO STATE UNIV.	COLUMBUS, OHIO, USA
OSUS	OKLAHOMA STATE UNIV.	STILLWATER, OK, USA
OTTA	UNIV. OF OTTAWA	OTTAWA, CANADA
OXF	OXFORD UNIV.	OXFORD, ENGLAND
PADO	UNIV. DI PADOVA	PADOVA, ITALY
PANU	PANJAB UNIV.	ROHTAK, INDIA
PARI	PARIS UNIV. BEFORE DIVISION IN EARLY 70'S	PARIS, FRANCE
PARM	UNIV. OF PARMA	PARMA, ITALY
PATR	UNIV. OF PATRAS	PATRAS, GREECE
PAVI	UNIV. DI PAVIA	PAVIA, ITALY
PENN	UNIV. OF PENNSYLVANIA	PHILADELPHIA, PA., USA
PHGD	PHYS. GESELLSCHAFT DER DDR, BERLIN	BERLIN, GERMANY
PIAS	PRINCETON INST. ADVANCED STUDY	PRINCETON, NJ, USA
PINP	INST. NAT. PHYS. NUCL. PHYS. PART.	PARIS, FRANCE
PISA	UNIV. DI PISA	PISA, ITALY
PITT	UNIV. OF PITTSBURGH	PITTSBURGH, PA., USA
PLAT	STATE UNIV. OF NEW YORK	PLATTSBURGH, NY, USA
POON	POONA UNIV.	POONA, INDIA
PPA	PRINCETON-PENN. PROTON ACCEL.	PRINCETON, N. J., USA
PRAG	INSTITUTE OF PHYSICS, CSAV	PRAGUE, CZECHOSLOVAKIA
PRES	PRESIDENCY COLLEGE	CALCUTTA, INDIA
PRIN	PRINCETON UNIV.	PRINCETON, N. J., USA
PSU	PENNSYLVANIA STATE UNIV.	UNIVERSITY PARK, PA., USA
PTCH	POTCHEFSTROOM UNIV	POTCHEFSTROOM, S.AFRICA

INSTITUTION VOCABULARY (CONT'D)

PTIU	PHYS. TECH. INST. OF ACAD. SCI., UZB.	TASHKENT, USSR
PUNJ	PUNJAB UNIV	CHANDIGARH, INDIA
PUNL	UNIV. OF THE PUNJAB	LAHORE, PAKISTAN
PURD	PURDUE UNIV.	LAFAYETTE, IND., USA
QUB	QUEENS UNIV. AT BELFAST	BELFAST, NORTHERN IRELAND
QUEB	UNIV. DU QUEBEC	MONTREAL, CANADA
QUNS	QUEENS COLLEGE OF CUNY	FLUSHING, N. Y., USA
RAJS	RAJSHAHI UNIV.	RAJSHAHI, BANGLADESH
RAWA	ISLAMABAD UNIV.	RAWALPINDI, PAKISTAN
REDL	REDLANDS UNIV	REDLANDS, CA, USA
REED	REED COLLEGE	PORTLAND, OREGON, USA
REHO	WEIZMANN INST. OF SCI.	REHOVOTH, ISRAEL
REZ	REZ INST. NUCL. PHYS.	REZ, CZECHOSLOVAKIA
RHEL	RUTHERFORD HIGH ENERGY LAB.	CHILTON, DID., OXON., ENGLAND
RHLC	ROYAL HOLLOWAY COLLEGE	ENGLEFIELD GREEN, ENGLAND
RICE	WILLIAM MARSH RICE UNIV.	HOUSTON, TEXAS, USA
RIKK	RIKKYO UNIVERSITY	RIKKYO, JAPAN
RIOJ	RIO DE JANEIRO UNIV.	RIO DE JANEIRO, BRAZIL
RISO	RESEARCH ESTAB. RISO	ROSKILDE, DENMARK
RITS	ROYAL INST. OF TECHNOLOGY	STOCKHOLM, SWEDEN
RMCS	ROYAL MILITARY COLLEGE OF SCIENCE	SHRIVENHAM, ENGLAND
ROCH	UNIV. OF ROCHESTER	ROCHESTER, N. Y., USA
ROCK	ROCKEFELLER UNIV	NEW YORK, N. Y., USA
ROMA	UNIV. DI ROMA	ROMA, ITALY
RUTG	RUTGERS UNIV.	NEW BRUNSWICK, N. J., USA
RUTP	RUTGERS UNIV AT PISCATAWY	PISCATAWAY, NJ, USA
RVAC	ROYAL VET. AND AGRIC. UNIV.	COPENHAGEN, DENMARK
SACL	CNTR. D'ETUDES NUC. SACLAY	GIF-SUR-YVETTE, FRANCE
SAGA	SAGA UNIV.	SAGA, JAPAN
SAGM	SAGAMI INST. TECH.	FUJISAWA, JAPAN
SAIT	SAITAMA UNIV.	SAITAMA, JAPAN
SAMC	SAITAMA MEDICAL COLL.	SAITAMA, JAPAN
SAND	SANDIA LABS	ALBUQUERQUE, NM, USA
SANI	IST. SUPERIORE DI SANITA	ROMA, ITALY
SANT	UNIV. DE SANTANDER	SANTANDER, SPAIN
SAOP	SAO PAULO UNIV	SAO PAULO, BRAZIL
SARA	SARATOVA STATE UNIV	SARATOVA, USSR
SASK	UNIV. OF SASKATCHEWAN	SASKATOON, CANADA
SBER	SAN BERNARDINO STATE COLL.	SAN BERNARDINO, CA, USA
SCAN	SCANDINAVIAN COLLABORATION	SCANDINAVIA
SCST	STATE COMM. ON SCIENCE AND TECH.	HANOI, NORTH VIETNAM
SCUC	UNIV. OF SOUTH CAROLINA AT COLUMBIA	COLUMBIA, SC, USA
SDGO	SAN DIEGO STATE COLL.	SAN DIEGO, CA, USA
SEAT	SEATTLE PACIFIC COLLEGE	SEATTLE, WASH., USA
SEIB	AUSTRIAN STUD. FUER ATOM-ENERGIE, PHYS.	VIENNA, SEIBERSDORF, AUSTRIA
SEOU	KOREA UNIV. AT SEOUL	SEOUL, S. KOREA
SERP	INST. OF HIGH EN. PHYS.	SERPUKOV, USSR
SETO	SETON HALL UNIV.	SOUTH ORANGE, N. J., USA
SFLA	SOUTH FLORIDA UNIV.	TAMPA, FL, USA
SFSU	SAN FRANCISCO STATE UNIV.	SAN FRANCISCO, CA, USA
SHAF	SHAFARIK UNIV.	KOSHITSE, USSR
SHEF	UNIV. OF SHEFFIELD	SHEFFIELD, YORKS., ENGLAND
SHIB	SHIBAURA INST. TECH.	TOKYO, JAPAN
SHIN	SHINSHU UNIV.	MATSUMOTO, JAPAN
SHIZ	SHIZUOKA UNIV	SHIZUOKA, JAPAN
SHMP	UNIV. OF SOUTHAMPTON	SOUTHAMPTON, ENGLAND
SHOW	SHOWA MEDICAL COLL.	TOKYO, JAPAN
SIEG	SIEGEN UNIV.	HUTTENTAL, GERMANY
SING	UNIV. OF SINGAPORE	SINGAPORE, SINGAPORE
SINR	INST. OF NUCL. RESEARCH	SOFIA, BULGARIA
SLAC	STANFORD LINEAR ACCEL. CENTER	STANFORD, CALIF., USA
SMAS	SOUTHEASTERN MASSACHUSETTS UNIV.	NORTH DARTMOUTH, MASS., USA
SMU	SOUTHERN METHODIST UNIV.	DALLAS, TEXAS, USA
SNRC	ISRAEL AEC SOREQ NUCL. RESEARCH CENTER	YAVNEH, ISRAEL
SNSP	SCUOLA NORMALE SUPERIORE	PISA, ITALY
SOFC	HIGH INST. OF CHEM. TECH.	SOFIA, BULGARIA
SOFI	BULGARIAN ACAD. OF SCI.	SOFIA, BULGARIA

INSTITUTION VOCABULARY (CONT'D)

SRI	STANFORD RESEARCH INST.	MENLO PARK, CALIF., USA
STAN	STANFORD UNIV.	STANFORD, CALIF., USA
STEL	UNIV. OF STELLENBOSCH	CAPE PROVINCE, SOUTH AFRICA
STEV	STEVENS INST. OF TECH.	HOBOKEN, N. J., USA
STLO	ST. LOUIS UNIV.	ST. LOUIS, MO., USA
STOH	STOCKHOLM UNIV.	STOCKHOLM, SWEDEN
STON	STATE UNIV. OF NEW YORK AT STONYBROOK	STONYBROOK, L.I., N. Y., USA
STPL	SAINT PAUL UNIV.	TOKYO, JAPAN
STRB	CENTRE DES RES. NUCLEAIRES	STRASBOURG, FRANCE
STRU	UNIV. DE STRASBOURG	STRASBOURG, FRANCE
SUFB	SUFFOLK UNIV	BOSTON, MA, USA
SUFF	SUFFOLK UNIV.	SUFFOLK, ENGLAND
SUSS	SUSSEX UNIV.	SUSSEX, ENGLAND
SYDN	UNIV. OF SYDNEY	SYDNEY, AUSTRALIA
SYRA	SYRACUSE UNIV.	SYRACUSE, N. Y., USA
TAJK	TAJIKSKII STATE UNIV	DUSHANBE, TAJIK, USSR
TAMU	TEXAS A AND M UNIV.	COLLEGE STATION, TEXAS, USA
TASH	TASHKENT STATE UNIV.	VUZGORODOK, UZB, USSR
TASM	TASMANIA UNIV.	HOBART, TASMANIA, AUSTRALIA
TATA	TATA INST. OF FUNDAMENTAL RESEARCH	BOMBAY, INDIA
TBIL	INST OF PHYSICS	TBILISI, USSR
TBSU	TBILISI STATE UNIV.	TBILISI, USSR
TEDD	NATIONAL PHYSICS LAB.	TEDDINGTON, ENGLAND
TELA	UNIV. OF TEL-AVIV	TEL-AVIV, ISRAEL
TEMP	TEMPLE UNIV.	PHILADELPHIA, PA., USA
TENN	UNIV. OF TENNESSEE	KNOXVILLE, TENN., USA
TEXA	UNIV. OF TEXAS AT AUSTIN	AUSTIN, TX, USA
TEXD	UNIV. OF TEXAS AT DALLAS	DALLAS, TX, USA
THES	UNIV. OF THESSALONIKI	THESSALONIKI, GREECE
TIMI	TIMISOARA UNIV	TIMISOARA, ROMANIA
TIPC	PHYS. AND CHEM. RESEARCH INST	TOKYO, JAPAN
TIYF	TASHKENT INST. YAD. FIZ.	ULUGBEK, UZB, USSR
TMSK	NUCL. PHYS. INST., TOMSK POLYTECH. INST.	TOMSK, USSR
TMU	TOKYO METROPOLITAN UNIV.	TOKYO, JAPAN
TNTO	UNIV. OF TORONTO	TORONTO, CANADA
TNTS	TORONTO U. SCARBOROUGH COLL.	WEST HILL, ONT. CANADA
TOCR	COSMIC RAY LAB, TOKYO UNIV.	TOKYO, JAPAN
TOGA	TOHOKU-GAKUIN UNIV.	MIYAGI, JAPAN
TOHO	TOHOKU UNIV.	SENDAI, JAPAN
TOIN	TOKYO INST. OF TECH.	TOKYO, JAPAN
TOKY	UNIV. OF TOKYO	TOKYO, JAPAN
TORI	UNIV. DI TORINO	TORINO, ITALY
TPOL	TASHKENT POLYTECH INST	TASHKENT, USSR
TRIN	TRINITY COLLEGE	DUBLIN, IRELAND
TRIU	TRIUMF, UNIV. OF BRITISH COLUMBIA	VANCOUVER, CANADA
TRON	UNIV. OF TRONDHEIM	TRONDHEIM, NORWAY
TRST	UNIV. DI TRIESTE	TRIESTE, ITALY
TRTU	TRONDHEIM TECHNICAL UNIV.	TRONDHEIM, NORWAY
TRW	TRW SYSTEMS	REDONDO BEACH, CA, USA
TSOP	SOPHIA UNIV.	TOKYO, JAPAN
TSUK	TSUKUBA UNIV.	IBARAKI, JAPAN
TUAT	TOKYO UNIV. OF AGRICULTURE AND TECH.	TOKYO, JAPAN
TUBI	TUBINGEN UNIV	TUBINGEN, GERMANY
TUED	TOKYO UNIV. OF EDUCATION	TOKYO, JAPAN
TUFT	TUFTS UNIV.	MEDFORD, MASS., USA
TUNI	TUNIS UNIV.	TUNIS, TUNISIA
TWAS	WASEDA UNIV.	TOKYO, JAPAN
UATH	UNIV. OF ATHENS	ATHENS, GREECE
UBEL	UNIV. OF BELGRADE	BELGRADE, YUGOSLAVIA
UCB	UNIV. OF CALIF. AT BERKELEY	BERKELEY, CALIF., USA
UCD	UNIV. OF CALIF. AT DAVIS	DAVIS, CALIF., USA
UCI	UNIV. OF CALIF. AT IRVINE	IRVINE, CALIF., USA
UCLA	UNIV. OF CALIF. AT LOS ANGELES	LOS ANGELES, CALIF., USA
UCND	UNION CARBIDE NUCLEAR DIVISION	OAK RIDGE, TENN., USA
UCR	UNIV. OF CALIF. AT RIVERSIDE	RIVERSIDE, CALIF., USA
UCSB	UNIV. OF CALIF. AT SANTA BARBARA	SANTA BARBARA, CALIF., USA

INSTITUTION VOCABULARY (CONT'D)

UCSC	UNIV. OF CALIF. AT SANTA CRUZ	SANTA CRUZ, CALIF., USA
UCSD	UNIV. OF CALIF. AT SAN DIEGO	LA JOLLA, CALIF., USA
ULAN	INST OF PHYS+CHEM, MONGOLIAN SCI. ACAD.	ULAN-BATOR, MONGOLIA
UMAD	UNIV. DE MADRID	MADRID, SPAIN
UMD	UNIV. OF MARYLAND	COLLEGE PARK, MD., USA
UNC	UNIV. OF NORTH CAROLINA	GREENSBORO, N. C., USA
UNCS	UNION COLLEGE	SCHENECTADY, N. Y., USA
UNM	UNIV. OF NEW MEXICO	ALBUQUERQUE, NEW MEX., USA
UPNJ	UPSALA COLLEGE	EAST ORANGE, N. J., USA
UPPT	TANDEMACCELERATORLABORATORIET	UPPSALA, SWEDEN
USC	UNIV. OF SOUTHERN CALIF.	LOS ANGELES, CALIF., USA
USPS	U. S. NAVAL POSTGRADUATE SCHOOL	MONTEREY, CALIF., USA
UTAH	UNIV. OF UTAH	SALT LAKE CITY, UTAH, USA
UTRE	UNIVERSITY OF UTRECHT	UTRECHT, NETHERLANDS
UTSU	UTSUNOMIYA UNIV.	UTSUNOMIYA, JAPAN
UUPP	UNIV. OF UPPSALA	UPPSALA, SWEDEN
UZHG	UZHGOROD STATE UNIV.	UZHGOROD, USSR
VALE	UNIV. DE VALENCIA	VALENCIA, SPAIN
VAND	VANDERBILT UNIV.	NASHVILLE, TENN., USA
VARA	BANARES HINDU UNIV.	VARANASI, INDIA
VARN	INST. ELECT. MECH. ENG.	VARNA, BULGARIA
VASS	VASSAR COLLEGE	POUGHKEEPSIE, N. Y., USA
VERR	COSMIC RAY PHYSICS LAB	VERRIERES LE BUISSON, FRANCE
VICT	VICTORIA UNIV.	VICTORIA, BC, CANADA
VIEN	INST. FOR HIGH EN. PHYS., A. A. S.	VIENNA, AUSTRIA
VILL	SIN VILLIGEN UNIV. HIGH ENERGY PHYS. LAB	VILLIGEN, SWITZERLAND
VIRG	UNIV. OF VIRGINIA	CHARLOTTESVILLE, VA., USA
VIRK	INST. FUER RADIUMFORSCHUNG UND KERNPHYSIK	VIENNA, AUSTRIA
VPI	VIRGINIA POLYTECHNIC INST.	BLACKSBURG, VA., USA
VRIJ	VRIJE UNIV.	AMSTERDAM, NETHERLANDS
WAKA	WAKAYAMA MEDICAL COLLEGE	WAKAYAMA-SHI, JAPAN
WARS	UNIV. OF WARSAW	WARSAW, POLAND
WASH	UNIV. OF WASHINGTON	SEATTLE, WASH., USA
WATR	UNIV. OF WATERLOO	WATERLOO, ONT., CANADA
WAYN	WAYNE STATE UNIV.	DETROIT, MICH., USA
WEST	WESTERN UNIV.	LONDON, CANADA
WIEN	UNIV. WIEN	VIENNA, AUSTRIA
WILL	COLLEGE OF WILLIAM AND MARY	WILLIAMSBURG, VA., USA
WISC	UNIV. OF WISCONSIN	MADISON, WISC., USA
WISP	WISCONSIN UNIV. AT PARKSIDE	PARKSIDE, WI, USA
WISW	UNIV OF WISCONSIN AT WAUSAU	WAUSAU, WI, USA
WITW	UNIV. OF THE WITWATERSRAND	JOHANNESBURG, SOUTH AFRICA
WLEE	WASHINGTON AND LEE UNIV.	LEXINGTON, VA, USA
WOOD	WOODSTOCK COLLEGE	WOODSTOCK, MD., USA
WOPI	WORCESTER POLYTECHNIC INST.	WORCESTER, MASS., USA
WSLC	WISCONSIN STATE UNIV	LA CROSSE, WI, USA
WTU	WARSAW TECH. UNIV.	WARSAW, POLAND
WUPP	UNIV. WUPPERTAL	WUPPERTAL, GERMANY
WURZ	WURZBURG UNIV.	WURZBURG, GERMANY
WUSL	WASHINGTON UNIV.	ST. LOUIS, MO., USA
WYOM	UNIV. OF WYOMING	LARAMIE, WYOMING, USA
YAKU	INST. OF COSMOPHYSICAL RESEARCH	YAKUTSK, USSR
YALE	YALE UNIV.	NEW HAVEN, CONN., USA
YAMG	YAMAGATA UNIV.	YAMAGATA, JAPAN
YAMN	YAMANASHI UNIV.	KOFU CITY, JAPAN
YERE	YEREVAN PHYSICS INST.	YEREVAN, ARMENIA, USSR
YERS	YEREVAN STATE UNIV.	YEREVAN, ARMENIA, USSR
YOKO	YOKOHAMA NATIONAL UNIV.	YOKOHAMA, JAPAN
YORK	YORK UNIVERSITY	DOWNSVIEW, ONT., CANADA
YUNN	YUNNAN UNIV	KUNMING, CHINA
ZAED	ZENT. FUER ATOMKERNENERGIE-D KUM.	EGGENSTEIN-LEOPOLDSHAFEN, GER.
ZAGR	INSTITUTE RUDER BOSKOVIC, ZAGREB	ZAGREB, YUGOSLAVIA
ZARA	ZARAGOZA UNIV.	ZARAGOZA, SPAIN
ZEEM	ZEEMAN LAB., UNIV. OF AMSTERDAM	AMSTERDAM, NETHERLANDS
ZURI	ZURICH UNIVERSITY	ZURICH, SWITZERLAND
?	UNKNOWN INSTITUTION	

PARTICLE VOCABULARY - ORDERED ALPHABETICALLY

We do not list most antiparticles here. The antiparticles of all baryons, neutral leptons, and neutral strange or charmed mesons are formed by prefixing the particle name with an "A". The charge is that of the antiparticle, so that, for example, AXI+ is the antiparticle of the XI-.

AC	C= *ACTINIUM NUCLEUS*
AG	C= *SILVER NUCLEUS*
AKN(I=0)	C= *ANTI-K NUCLEON I=0 INITIAL STATE (AND ELASTIC FINAL STATE)*
AKN(I=1)	C= *ANTI-K NUCLEON I=1 INITIAL STATE (AND ELASTIC FINAL STATE). DO NOT USE FOR THE SINGLE PHYSICAL STATE (K- N)*
AL	C= *ALUMINUM NUCLEUS*
ANNIHIL	C= *PURE ANNIHILATION FINAL STATE IN NUCLEON-ANTI-NUCLEON SCATTERING*
ANN(I=0)	C= *ANTI-NUCLEON NUCLEON I=0 INITIAL STATE (AND ELASTIC FINAL STATE)*
ANN(I=1)	C= *ANTI-NUCLEON NUCLEON I=1 INITIAL STATE (AND ELASTIC FINAL STATE). DO NOT USE FOR THE SINGLE PHYSICAL STATE (AP N)*
ANN(1794)0	C= *NARROW N AN STATE*
ANN(1873)0	C= *NARROW N AN STATE*
ANN(1900)0	C= *NARROW N AN STATE*
ANN(1900)0	C= *RESONANCE SEEN IN N NBAR*
ANN(1900)+	C= *RESONANCE SEEN IN N NBAR*
ANN(1900)-	C= *RESONANCE SEEN IN NBAR*
ANN(1935)0	C= *NARROW N AN STATE*
ANN(1935)+	ANN(1935)-
ANN(1968)0	C= *NARROW N AN STATE*
ANN(2020)0	C= *VERY NARROW P PBAR RESONANCE*
ANN(2200)0	C= *VERY NARROW P PBAR RESONANCE*
ANN(2370)0	
ANN(2610)0	
ANYTHING	C= *FOR USE IN INCLUSIVE REACTIONS, ALSO FOR CROSS-SECTION DATA, AS IN K- P --> ANYTHING*
APRIME(1800)0	C= *3P1 STATE*
APRIME(1800)+	C= *3P1 STATE*
APRIME(1800)-	C= *3P1 STATE*
AR	C= *ARGON NUCLEUS -- NOTE NAME IS NOT SAME AS CHEM. SYMBOL*
AR37	C= *ARGON 37 NUCLEUS*
AS	C= *ARSENIC NUCLEUS*
AST	C= *ASTATINE NUCLEUS - NOTE NAME IS NOT SAME AS CHEMICAL SYMBOL*
AU	C= *GOLD NUCLEUS*
AXION	C= *HYPOTHESIZED LIGHT HIGGS SCALAR BOSON*
A1(1100)0	A1(1100)+ A1(1100)-
A1.5(1170)0	A1.5(1170)+ A1.5(1170)-
A2(1310)0	A2(1310)+ A2(1310)-
A3(1640)0	A3(1640)+ A3(1640)-
A4(1900)0	A4(1900)+ A4(1900)-
A4(2200)0	A4(2200)+ A4(2200)-
A5(1790)0	A5(1790)+ A5(1790)-
BA	C= *BARIUM NUCLEUS*
BARYON	C= *BARYON OF UNSPEC CHG, S, I, MASS*
BARYONIUM	C= *MESONS THAT COUPLE PROMINENTLY TO BARYON-ANTIBARYON*
BE	C= *BERYLLIUM NUCLEUS*
BI	C= *BISMUTH NUCLEUS*
BOR	C= *BORON NUCLEUS -- NOTE NAME IS NOT SAME AS CHEMICAL SYMBOL*
BR	C= *BROMINE*
B1(1040)0	B1(1040)+ B1(1040)-

B(1235)0	B(1235)+ B(1235)-
C	C= *CARBON NUCLEUS*
CA	C= *CALCIUM NUCLEUS*
CC	C= *CHARGE CONJUGATE REACTION*
CD	C= *CADMIUM NUCLEUS*
CE	C= *CERIUM NUCLEUS*
CENTAURO	C= *NEW TYPE OF FINAL STATE WITH 50 OR MORE CHARGED PARTICLES, NO PIOS*
CHARGED	C= *CHARGED PARTICLE. UNLIKE PRONG, THIS DOES NOT INCLUDE POSSIBLE NEUTRALS*
CHARGED+	C= *POSITIVE CHARGED PARTICLE*
CHARGED-	C= *NEGATIVE CHARGED PARTICLE*
CHARM	C= *CHARMED PART.CLE*
CHARMED-BARYON	C= *CHARMED BARYON OF UNSPECIFIED C, S, I, OR CHARGE*
CHGD-HADRON	C= *CHARGED HADRON*
CHGD-HADRONS	C= *TWO OR MORE CHGD HADRONS*
CHGD-HADRONS(S)	C= *ONE OR MORE CHGD HADRONS*
CHI(UNSPEC)	C= *UNSPECIFIED RADIATIVE DECAY PRODUCT OF PSI(3700)*
CHI(UNSPEC)0	C= *UNSPECIFIED RADIATIVE DECAY PRODUCT OF PSI(3700)*
CHI(3415)	
CHI(3450)0	C= *RADIATIVE DECAY PRODUCT OF PSI(3700)*
CHI(3500)	C= *RADIATIVE DECAY OF PSI(3700)*
CHI(3550)	C= *RADIATIVE DECAY OF PSI(3700)*
CL	C= *CHLORINE*
CL37	C= *CHLORINE 37 NUCLEUS*
CO	C= *COBALT NUCLEUS*
COSMIC	C= *COSMIC-RAY PARTICLE OF UNDETERMINED NATURE*
CR	C= *CHROMIUM NUCLEUS*
CS	C= *CESIUM NUCLEUS*
CU	C= *COPPER NUCLEUS*
C12	C= *CARBON-12 NUCLEUS*
C*	C= *EXCITED STATE OF CARBON, USE FOR ALL BUT C*(4.44) (0.V.)*
C*(4.44)	C= *4.44 KEV EXCITED STATE OF CARBON*
DD	C= *DIFFRACTION DISSOCIATION. TO BE FOLLOWED BY NAMES OF PARTICLES WHICH WERE PRODUCED VIA DIFFRACTION DISSOCIATION. E.G. DD <P PIO>*
DELTA(1250)0	DELTA(1250)+ DELTA(1250)-
DELTA(970)0	DELTA(970)+ DELTA(970)-
DEL0	C= *DEL(1232P33)0*
DEL+	C= *DEL(1232P33)+*
DEL++	C= *DEL(1232P33)++*
DEL-	C= *DEL(1232P33)-*
DEL(UNSPEC)0	C= *I=3/2 BARYON OF UNSPECIFIED MASS, USE PRIMARILY IN PROP, RVUE, COMP*
DEL(UNSPEC)+	C= *I=3/2 BARYON OF UNSPECIFIED MASS, USE PRIMARILY IN PROP, RVUE, COMP*
DEL(UNSPEC)++	C= *I=3/2 BARYON OF UNSPECIFIED MASS, USE PRIMARILY IN PROP, RVUE, COMP*
DEL(UNSPEC)-	C= *I=3/2 BARYON OF UNSPECIFIED MASS, USE PRIMARILY IN PROP, RVUE, COMP*
DEL(1640B)0	DEL(1640B)+ DEL(1640B)++ DEL(1640B)-
DEL(1650S31)0	DEL(1650S31)+ DEL(1650S31)++ DEL(1650S31)-
DEL(1670D33)0	DEL(1670D33)+ DEL(1670D33)++ DEL(1670D33)-
DEL(1690P33)0	DEL(1690P33)+ DEL(1690P33)++ DEL(1690P33)-
DEL(1750P33)0	C= *SEE METCALF 74*
DEL(1750P33)+	C= *SEE METCALF 74*
DEL(1750P33)++	C= *SEE METCALF 74*
DEL(1750P33)-	C= *SEE METCALF 74*
DEL(1860P31)0	DEL(1860P31)+ DEL(1860P31)++ DEL(1860P31)-
DEL(1880B)0	C= *BUMP IN PRODUCTION EXPERIMENT*
DEL(1880B)+	C= *BUMP IN PRODUCTION EXPERIMENT*
DEL(1880B)++	C= *BUMP IN PRODUCTION EXPERIMENT*

DEL(1880B)-	C= BUMP IN PRODUCTION EXPERIMENT		
DEL(1885F35)0	DEL(1885F35)+	DEL(1885F35)++	DEL(1885F35)-
DEL(1890F35)0	DEL(1890F35)+	DEL(1890F35)++	DEL(1890F35)-
DEL(1900S31)0	DEL(1900S31)+	DEL(1900S31)++	DEL(1900S31)-
DEL(1910P31)0	DEL(1910P31)+	DEL(1910P31)++	DEL(1910P31)-
DEL(1925D35)0	DEL(1925D35)+	DEL(1925D35)++	DEL(1925D35)-
DEL(1940F31)0	DEL(1940P31)+	DEL(1940P31)++	DEL(1940P31)-
DEL(1940P33)0	DEL(1940P33)+	DEL(1940P33)++	DEL(1940P33)-
DEL(1950B)0	DEL(1950B)+	DEL(1950B)++	DEL(1950B)-
DEL(1950F37)0	DEL(1950F37)+	DEL(1950F37)++	DEL(1950F37)-
DEL(1960D35)0	DEL(1960D35)+	DEL(1960D35)++	DEL(1960D35)-
DEL(1960P31)0	DEL(1960P31)+	DEL(1960P31)++	DEL(1960P31)-
DEL(2000P33)0	DEL(2000P33)+	DEL(2000P33)++	DEL(2000P33)-
DEL(2020B)0	DEL(2020B)+	DEL(2020B)++	DEL(2020B)-
DEL(2160)0	DEL(2160)+	DEL(2160)++	DEL(2160)-
DEL(2200D35)0	C= SEE WA 74C		
DEL(2200D35)+	C= SEE WA 74C		
DEL(2200D35)++	C= SEE WA 74C		
DEL(2200D35)-	C= SEE WA 74C		
DEL(2420B)0	DEL(2420B)+	DEL(2420B)++	DEL(2420B)-
DEL(2420H311)0	DEL(2420H311)+	DEL(2420H311)++	DEL(2420H311)-
DEL(2850B)0	DEL(2850B)+	DEL(2850B)++	DEL(2850B)-
DEL(3230B)0	DEL(3230B)+	DEL(3230B)++	DEL(3230B)-
DEUT			
DEUT**(2500)+	C= LOW MASS D PI PI BUMP		
DEUT*(2170)0	DEUT*(2170)+	DEUT*(2170)++	
DIBARYON	C= DI-BARYON RESONANCE OF UNSPEC MASS		
DIHYPERON	C= DI-HYPERON RESONANCE OF UNSPEC MASS		
DIHYPERON(2130)0			
DIHYPERON(2130)+	C= DI-HYPERON RESONANCE, SEE DOSCH 77B		
DY	C= DYSPROSIUM NUCLEUS		
D0	C= CHARMED PARTICLE CANDIDATE		
D+	C= CHARMED PARTICLE CANDIDATE		
D-	C= CHARMED PARTICLE CANDIDATE		
D*(2010)0	C= CHARMED PARTICLE CANDIDATE		
D*(2010)+	C= CHARMED PARTICLE CANDIDATE		
D*(2010)-	C= CHARMED PARTICLE CANDIDATE		
D*(2150)0	C= CHARMED PARTICLE CANDIDATE		
D*(2300)0	C= CHARMED MESON, SEE ABOLINS 76B		
D(1285)			
ELECTRONS	C= TWO OR MORE ELECTRONS		
ELECTRON(S)	C= ONE OR MORE ELECTRONS		
EPSILON(1200)	C= PIPI S-WAVE (NEAR 1200 MEV)		
EPSILON(700)	C= PIPI S-WAVE (NEAR 700 MEV)		
ER	C= ERBIUM NUCLEUS		
ETA			
ETAPRIME			
ETA/C	C= JP=0- CHARMONIUM STATE		
ETA(1080)			
EU	C= EUROPIUM NUCLEUS		
EVEN-PRONG			
EXOTIC-HYPERON	C= CANNOT BE FORMED OF QUARK-ANTI-QUARK OR QQQ		
EXOTIC-MESON	C= CANNOT BE FORMED OF QUARK-ANTI-QUARK		
EXOTIC-NUCLEON	C= CANNOT BE FORMED OF QQQ		
EX(1640)0	C= I=5/2 NON-STRANGE BARYON (EXOTIC)		
EX(1640)+	C= I=5/2 NON-STRANGE BARYON (EXOTIC)		
EX(1640)++	C= I=5/2 NON-STRANGE BARYON (EXOTIC)		
EX(1640)+++	C= I=5/2 NON-STRANGE BARYON (EXOTIC)		
EX(1640)-	C= I=5/2 NON-STRANGE BARYON (EXOTIC)		
EX(1640)--	C= I=5/2 NON-STRANGE BARYON (EXOTIC)		

E+	C= POSITRON
E+-	C= ELECTRON OR POSITRON
E-	C= ELECTRON
E(1420)	
F	C= F(1270) MESON RESONANCE
FE	C= IRON NUCLEUS
FL	C= FLUORINE NUCLEUS -- NOTE NAME IS NOT SAME AS CHEMICAL SYMBOL
FPRIME	
FR	C= FRANCIUM NUCLEUS
FRAG	C= FRAGMENT FROM NUCLEUS. USED FOR DESCRIPTION OF HEAVY ION EXPERIMENTS
FRAGB	C= FRAGMENT OF BEAM
FRAGS	C= TWO OR MORE NUCLEAR FRAGMENTS
FRAGT	C= FRAGMENT OF TARGET
FRAG(S)	C= ONE OR MORE NUCLEAR FRAGMENTS
F1(1540)0	F1(1540)+ F1(1540)-
F+	C= CHARMED STRANGE GROUND STATE MESON
F-	C= CHARMED STRANGE GROUND STATE MESON
F*(2140)+	C= FIRST EXCITED CHARMED STRANGE MESON
F*(2140)-	C= FIRST EXCITED CHARMED STRANGE MESON
GA	C= GALLIUM NUCLEUS
GAMMA	
GAMMAS	C= TWO OR MORE GAMMAS
GAMMA(S)	C= ONE OR MORE GAMMAS
GD	C= GADOLINIUM NUCLEUS
GE	C= GERMANIUM NUCLEUS
G(1680)0	G(1680)+ G(1680)-
HADRON	C= SINGLE HADRON, ANY CHARGE OR MASS
HADRONS	C= TWO OR MORE HADRONS
HADRON0	C= CHARGE 0 HADRON
HADRON+	C= CHARGE + HADRON
HADRON-	C= CHARGE - HADRON
HADRON(S)	C= ONE OR MORE HADRONS
HDIBARYON	C= UNSPECIFIED S=-1,B=2 STATE
HDIBARYON(2130)+	C= REPORTED HYPER-DIBARYON
HE	C= HELIUM-4 NUCLEUS
HEAVY	C= UNSPECIFIED STABLE PARTICLE (M>PROTON)
HES	C= TWO OR MORE HE NUCLEI
HE3	C= HELIUM 3
HE(S)	C= ONE OR MORE HE NUCLEI
HF	C= HAFNIUM NUCLEUS
HG	C= MERCURY NUCLEUS
HIGGS	C= HIGGS BOSON
HNUCLEUS	C= HYPER-NUCLEUS
HO	C= HOLMIUM NUCLEUS
HVY-LEPTON	C= GENERAL HEAVY LEPTON
HVY-LEPTON0	C= HEAVY LEPTON
HVY-LEPTON+	C= HEAVY LEPTON
HVY-LEPTON-	C= HEAVY LEPTON
HYPERON	C= GENERAL HYPERON
H(1920)0	C= C=+ MESON
H(2040)	C= I=0, JP=4+ MESON RESONANCE
H(990)	
I	C= IODINE NUCLEUS
IN	C= INDIUM NUCLEUS
INELASTIC	C= SAME AS ANYTHING, EXCEPT ELASTIC EXCLUDED
IR	C= IRIDIUM NUCLEUS
I(2600)	
I(2600)+	C= NEW, POSSIBLY CHARMED MESON IN AP P --> 4PI K + X

I(2600)-	C= NEW, POSSIBLY CHARMED MESON IN AP P --> 4PI K + X
J/PSI(3100)0	
KAON	C= EXACTLY ONE KAON OR AKAON OF UNSPECIFIED CHARGE
KAONS	C= TWO OR MORE UNSPEC KAONS
KAON(S)	C= ONE OR MORE UNSPEC KAONS
KAPPA(1250)0	C= KPI S-WAVE
KAPPA(1250)+	C= KPI S-WAVE
KAPPA(1250)-	C= AKPI S-WAVE
KINK+	C= POSITIVE KINKING TRACK OBSERVED IN TRACK DETECTOR
KINK-	C= NEGATIVE KINKING TRACK OBSERVED IN TRACK DETECTOR
KK	C= POTASSIUM NUCLEUS -- NOTE NAME IS NOT SAME AS CHEMICAL SYMBOL
KKBAR	C= UNSPECIFIED KKBAR COMBINATIONS
KL	C= K LONG
KN(I=0)	C= K NUCLEON I=0 INITIAL STATE (AND ELASTIC FINAL STATE)
KN(I=1)	C= K NUCLEON I=1 INITIAL STATE (AND ELASTIC FINAL STATE). DO NOT USE FOR THE SINGLE PHYSICAL STATE (K+ P)
KN(1700)0	C= POSSIBLE K- OMEGA STATE
KN(1700)+	C= POSSIBLE K- OMEGA STATE
KN(1700)-	C= POSSIBLE K- OMEGA STATE
KN(1800)0	KN(1800)+ KN(1800)-
KPI(I=1/2)	C= THE I=1/2 KPI STATE
KPI(I=3/2)	C= THE I=3/2 KPI STATE
KPI(S30)++	C= K PI S-WAVE STATE (EXOTIC)
KPRIME(1400)0	C= 1P=0- STATE SEEN IN PWA BY BRANDENBURG 76, DECAYING PREDOMINATLY TO EPSILON KO
KPRIME(1400)+	C= 1P=0- STATE SEEN IN PWA BY BRANDENBURG 76, DECAYING PREDOMINATLY INTO EPSILON KO
KPRIME(1400)-	C= 1P=0- STATE SEEN IN PWA BY BRANDENBURG 76, DECAYING PREDOMINATLY INTO EPSILON KO
KR	C= KRYPTON NUCLEUS
KS	C= K SHORT
KSIG(I=1/2)	C= I=1/2 K SIGMA SYSTEM OF UNSPECIFIED MASS, STRANGENESS FOR PWA
KSIG(I=3/2)	C= I=3/2 K SIGMA SYSTEM OF UNSPECIFIED MASS, STRANGENESS FOR PWA
KS(S)	C= ONE OR MORE KO SHORTS
KO	K+
K+(S)	C= ONE OR MORE K+
K-	
K-(S)	C= ONE OR MORE K-
K*	C= K*(892) OF UNSPECIFIED CHARGE
K*PI(I=1/2)	C= USED FOR I=1/2 SUM OF K* PI STATES
K*PI(I=3/2)	C= USED FOR I=3/2 SUM OF K* PI STATES
K*(UNSPEC)	C= FOR USE IN PROP, RVUE, COMP
K*(UNSPEC)0	C= FOR USE IN PROP, RVUE, COMP
K*(UNSPEC)+	C= FOR USE IN PROP, RVUE, COMP
K*(UNSPEC)-	C= FOR USE IN PROP, RVUE, COMP
K*(1225)0	K*(1225)+ K*(1225)-
K*(1420)0	K*(1420)+ K*(1420)-
K*(1450)0	C= CLAIMED DIFFERENT THAN K*(1420)
K*(1450)+	C= CLAIMED DIFFERENT THAN K*(1420)
K*(1450)-	C= CLAIMED DIFFERENT THAN K*(1420)
K*(1780)0	K*(1780)+ K*(1780)-
K*(2200)0	K*(2200)+ K*(2200)-
K*(2800)0	K*(2800)+ K*(2800)-
K*(892)0	K*(892)+ K*(892)-

LA	C= LANTHANIUM NUCLEUS
LAMBDA	
LAMBDAS	C= TWO OR MORE LAMBDAS
LAMBDA/C+	
LAMBDA(S)	C= ONE OR MORE LAMBDAS
LAM(UNSPEC)	C= I=0, S=-1 BARYON RESONANCE, FOR USE PRIMARILY IN PROP, RVUE, COMP
LAM(1330B)	C= BUMP AT 1330 MEV
LAM(1405S01)	
LAM(1520D03)	
LAM(1600P01)	
LAM(1670S01)	
LAM(1690D03)	
LAM(1730S01)	
LAM(1800G09)	
LAM(1800P01)	
LAM(1815F05)	
LAM(1830D05)	
LAM(1860P03)	
LAM(1870S01)	
LAM(2010)	
LAM(2020F07)	
LAM(2100B)	C= BUMP AT 2100 MEV
LAM(2100F05)	
LAM(2100F07)	
LAM(2100G07)	
LAM(2110F05)	
LAM(2340D03)	
LAM(2350B)	C= I=0, Y=0 BUMPS
LAM(2360H09)	
LAM(2585B)	
LEPTON	C= UNSPECIFIED LEPTON
LEPTONS	C= 2 OR MORE LEPTONS
LEPTON(S)	C= ONE OR MORE LEPTONS
LI	C= LITHIUM NUCLEUS
LI6	LI7
LONGLIVED	C= STABLE UNDER STRONG OR E- DECAY; MASS AND OTHER Q NUMBERS NOT WELL-DETERMINED
LU	C= LUTETIUM NUCLEUS
L(1770)0	L(1770)+ L(1770)-
MANY	C= USED RARELY IN REVIEWS WHEN LARGE NUMBERS OF PARTICLES ARE REVIEWED, USE FOR PP ONLY, NOT AS FINAL STATE PARTICLE
MESON	C= SINGLE MESON OF UNSPEC TYPE
MESONS	C= TWO OR MORE MESONS
MESON(S)	C= ONE OR MORE MESONS
MESON(UNSPEC)0	C= CHG ZERO MESON OF UNSPEC MASS
MESON(UNSPEC)+	C= CHG +1 MESON OF UNSPEC MASS
MESON(UNSPEC)-	C= CHG -1 MESON OF UNSPEC MASS
MESON(1970)0	C= 1970 MEV I=1 MESON DECAYING INTO K*(1420) AK
MESON(1970)+	C= 1970 MEV I=1 MESON DECAYING INTO K*(1420) AK
MESON(1970)-	C= 1970 MEV I=1 MESON DECAYING INTO K*(1420) AK
MESON(2190)0	C= 2190 MEV I=1 MESON OBSERVED IN AP P AND AP D TOTAL CS
MESON(2190)+	C= 2190 MEV I=1 MESON OBSERVED IN AP P AND AP D TOTAL CS
MESON(2190)-	C= 2190 MEV I=1 MESON OBSERVED IN AP P AND AP D TOTAL CS
MESON(2850)0	C= BUMP SEEN IN AP N INDUCED INTERACTIONS
MESON(2850)+	C= BUMP SEEN IN AP N INDUCED INTERACTONS
MESON(2850)-	C= BUMP SEEN IN AP N INDUCED INTERACTIONS

MESON(2950) C= BUMP SEEN IN P AP PI-
MESON(2950)0 C= BUMP SEEN IN P AP PI-
MESON(2950)+ C= BUMP SEEN IN P AP PI-
MESON(2950)- C= BUMP SEEN IN P AP PI-
MESON(3050)0 C= BUMP SEEN IN AP N INDUCED INTERACTIONS
MESON(3050)+ C= BUMP SEEN IN AP N INDUCED INTERACTIONS
MESON(3050)- C= BUMP SEEN IN AP N INDUCED INTERACTIONS
MESON(3270)0 C= NEW POSSIBLE PARTICLE OBSERVED IN E+ E- --> MU+ MU- 2GAMMA AS A BUMP IN 2GAMMA MASS REPORTED IN SLAC-PUB-1644
MESON(3500)0 C= NEW POSSIBLE PARTICLE OBSERVED IN E+ E- --> MU+ MU- 2GAMMA AS A BUMP IN 2GAMMA MASS REPORTED IN SLAC-PUB-1644
MESON(3520)0 C= OBSERVED IN E+ E- 2GAMMA FINAL STATE IN WHICH 2GAMMA HAS A BUMP AT 160 MEV. SEE R=DESY-75-20 FOR DETAIL
MG C= MAGNESIUM NUCLEUS
MM.GE.0 C= ZERO, ONE OR MORE UNDETECTED NEUTRAL PARTICLES ** SEE MM AND MM.GE.1 FOR OTHER MISSING MASS STATES
MM.GE.1 C= ONE OR MORE UNDETECTED NEUTRAL PARTICLES ** SEE MM AND MM.GE.0 FOR OTHER MISSING MASS STATES
MM.GE.2 C= TWO OR MORE UNDETECTED NEUTRAL PARTICLES
MN C= MANGANESE NUCLEUS
MO C= MOLYBDENUM NUCLEUS
MONOPOLE C= MAGNETIC MONOPOLE
MUON C= GENERIC PARTICLE, USED FOR REVIEW ARTICLES
MUONS C= TWO OR MORE MUONS
MUON(S) C= ONE OR MORE MUONS
MU+ MU-
M(1033) C= NON-STRANGE, I=0 MESON RESONANCE
M(1150) C= NON-STRANGE, I=0 MESON RESONACE
M(940) C= NON-STRANGE, I=0 MESON RESONANCE
M(953) C= NON-STRANGE, I=0 MESON RESONANCE
N C= NEUTRON
NA C= SODIUM NUCLEUS
NANO(2375) C= NUCLEON-ANTINUCLEON I=0 BUMP
NB N= NIOBIUM NUCLEUS
ND C= NEODYMIUM NUCLEUS
NE C= NEON NUCLEUS
NEPSILON(I=1/2) C= NUCLEON EPSILON I=1/2 FINAL STATE
NEUTRAL C= SINGLE NEUTRAL PARTICLE
NEUTRALS C= TWO OR MORE NEUTRAL PARTICLES -- DO NOT USE FOR MM
NEUTRAL(S) C= ONE OR MORE NEUTRAL PARTICLES -- DO NOT USE FOR MM.GE.1
NEUTRONS C= TWO OR MORE NEUTRONS
NEUTRON(S) C= ONE OR MORE NEUTRONS
NI C= NICKEL NUCLEUS
NIT C= NITROGEN 14 NUCLEUS -- NOTE NAME IS NOT SAME AS CHEMICAL SYMBOL
NIT12 C= NITROGEN-12 NUCLEUS
NN(I=0) C= NUCLEON NUCLEON I=0 INITIAL STATE (AND ELASTIC FINAL STATE)
NN(I=1) C= NUCLEON NUCLEON I=1 INITIAL STATE (AND ELASTIC FINAL STATE). DO NOT USE FOR THE SINGLE PHYSICAL STATE (P P)
NN(2250)0 C= DIRECT CHANNEL DI-BARYON RESONANCE SEEN IN PP TOTAL
NN(2250)+ C= DIRECT CHANNEL DI-BARYON RESONANCE SEEN IN PP TOTAL

PARTICLE VOCABULARY - ORDERED ALPHABETICALLY (CONT'D)

NN(2250)++ C= DIRECT CHANNEL DI-BARYON RESONANCE SEEN IN PP TOTAL
NN(2250)- C= DIRECT CHANNEL DI-BARYON RESONANCE SEEN IN PP TOTAL
NONSTRG-PRONG C= PRONG PRODUCED BY NON-STRANGE PARTICLE
NON-RES C= NON-RESONANT STATE. TO BE FOLLOWED BY NAMES OF PARTICLES WHICH WERE PRODUCED IN A NON-RESONANT STATE. E.G. NON-RES <P PI+>
NP C= NEPTUNIUM NUCLEUS
NRHO(I=1/2) C= NUCLEON RHO I=1/2 FINAL STATE
NRHO(I=3/2) C= NUCLEON RHO I=3/2 FINAL STATE
NU
NUCLEON
NUCLEONS C= TWO OR MORE UNSPEC NUCLEONS
NUCLEON(S) C= ONE OR MORE UNSPEC NUCLEONS
NUCLEUS C= GENERAL NUCLEUS. USE ONLY WHEN THE EXACT NUCLEUS OR NUCLEON IS NOT SPECIFIED. E.G., USE FOR TARGET WHEN DETECTOR IS EMULSION.
NUE
NUMU
NUS C= TWO OR MORE UNSPECIFIED NEUTRINOS
NUTAU C= NEUTRINO ASSOCIATED WITH TAU-
NU-UNSPEC C= NEUTRINO OF UNSPECIFIED PARTICLE OR ANTI-PARTICLE TYPE
NU(S) C= ONE OR MORE UNSPECIFIED NEUTRINOS
N*5/2(UNSPEC) C= I=5/2, Y=1 BARYON OF UNSPEC MASS AND CHG
N*5/2(UNSPEC)+++ C= I=5/2, Y=1 BARYON OF UNSPEC MASS, FOR USE PRINCIPALLY IN PROP, RVUE, COMP
N*(UNSPEC) C= S=0 BARYON OF UNSPEC MASS, ISOSPIN, FOR USE IN PROP, RVUE, COMP
N*(UNSPEC)0 C= I UNSPECIFIED, Y=1 BARYON OF UNSPEC MASS
N*(UNSPEC)+ C= I UNSPECIFIED, Y=1 BARYON OF UNSPEC MASS
N*(UNSPEC)- C= I UNSPEC, MASS UNSPEC, Y=1 BARYON
N(CHARGED+)
N(CHARGED-)
N(CHARGED) C= CHARGED PARTICLE, FOR MULTIPLICITY DISTRIBUTION ONLY
N(CHGD-HADRON) C= A COLLECTION OF REACTIONS TO DIFFERENT NUMBERS OF CHARGED HADRONS. USE ONLY WITH DD=MULT
N(ELECTRON) C= FOR MULT DIST OF ELECTRONS
N(FRAGB) C= USED FOR MULT DIST OF BEAM FRAGMENTS
N(FRAGT) C= USED FOR MULT DIST OF TARGET FRAGMENTS
N(FRAG) C= USED FOR MULTIPLICITY DISTRIBUTION OF HEAVY IONS
N(F) C= F MESON MULTIPLICITY, USE WITH DD=MULT ONLY
N(GAMMA) C= GAMMA MULTIPLICITY, USE WITH DD=MULT ONLY
N(HADRON) C= A COLLECTION OF REACTIONS TO DIFFERENT NUMBERS OF HADRONS, E.G. 2HADRON, 3HADRON, 4HADRON, ETC.. USE ONLY WITH DD=MULT.
N(HE) C= USED FOR MULTIPLICITY DISTRIBUTION OF HELIUM NUCLEI IN FINAL STATE. USE ONLY WITH DD=MULT
N(KAON) C= FOR MULT DIST OF UNSPEC KAONS
N(KL) C= USED FOR MULT DIST OF KL
N(KS) C= USED FOR MULT DIST OF KS
N(K0) C= A COLLECTION OF REACTIONS TO DIFFERENT NUMBERS OF K0S. USE ONLY WITH DD=MULT
N(K+) C= USED FOR MULT DIST OF K+
N(K-) C= USED FOR MULTIPLICITY DISTRIBUTION OF K-. USE ONLY WITH DD=MULT.
N(K*(1420)0) C= MULTIPLICITY DISTRIBUTION FOR K*(1420)0. USE ONLY WITH DD=MULT
N(K*(1420)+) C= MULTIPLICITY DISTRIBUTION FOR K*(1420)+. USE ONLY WITH DD=MULT

N(K*(1420)-)	C= MULTIPLICITY DISTRIBUTION FOR K*(1420)-. USE ONLY WITH DD=MULT
N(K*(892)0)	C= MULTIPLICITY DISTRIBUTION FOR K*(892)0. USE ONLY WITH DD=MULT
N(K*(892)+)	C= MULTIPLICITY DISTRIBUTION FOR K*(892)+. USE ONLY WITH DD=MULT
N(K*(892)-)	C= MULTIPLICITY DISTRIBUTION FOR K*(892)-. USE ONLY WITH DD=MULT
N(LAMBDA)	C= A COLLECTION OF REACTIONS TO DIFFERENT NUMBERS OF LAMBDAS. USE ONLY W ITH DD=MULT
N(LEPTON)	C= LEPTON MULTIPLICITY, USE WITH DD=MULT ONLY
N(MESON)	C= USED FOR MULTIPLICITY DISTRIBUTION OF MESON. DD=MULT ONLY
N(MUON)	C= MUON MULTIPLICITY, USE WITH DD=MULT ONLY
N(NEUTRAL)	C= A COLLECTION OF REACTIONS TO DIFFERENT NUMBERS OF NEUTRALS. USE ONLY WITH DD=MULT
N(NUCLEON)	C= FOR MULT DIST OF UNSPEC NUCLEONS
N(NU)	C= NEUTRINO MULTIPLICITY, USE WITH DD=MULT ONLY
N(N)	C= USED FOR MULTIPLICITY DISTRIBUTION OF N. USE ONLY WITH DD=MULT.
N(PION)	C= PION MULTIPLICITY, USE WITH DD=MULT ONLY
N(PIO)	C= PIO MULTIPLICITY, USE WITH DD=MULT ONLY
N(PI+)	C= USED FOR MULTIPLICITY DISTRIBUTION OF PI+. USE ONLY WITH DD=MULT
N(PI-)	C= USED FOR MULTIPLICITY DISTRIBUTION OF PI-. USE ONLY WITH DD=MULT
N(PRONG)	C= A COLLECTION OF REACTIONS WITH DIFFERENT NUMBERS OF PRONGS, E.G. 0(PRONG), 2(PRONG), 4(PRONG), ETC.. USE ONLY WITH DD=MULT.
N(P)	C= PROTON MULTIPLICITY DISTRIBUTION, USE WITH DD=MULT ONLY
N(RHO0)	C= RHO0 MULTIPLICITY, USE WITH DD=MULT ONLY
N(RHO)	C= MULTIPLICITY OF RHO MESONS OF UNSPECIFIED CHARGE, USE WITH DD=MULT ONLY
N(SIGMA0)	C= A COLLECTION OF REACTIONS TO DIFFERENT NUMBERS OF SIGMA0S. USE ONLY W ITH DD=MULT
N(SIGMA+)	C= USED FOR MULT DIST OF SIGMA+
N(SIGMA-)	C= USED FOR MULT DIST OF SIGMA-
N(SPECT)	C= SPECTATOR NEUTRON (NOT NUMBER OF SPECTATORS)
N(STRANGE)	C= USED FOR MULT DIST OF UNSPEC STRANGE PARTICLES
N(UNSPEC)	C= I=1/2, Y=1 BARYON OF UNSPECIFIED MASS
N(UNSPEC)0	C= I=1/2, Y=1 BARYON OF UNSPEC MASS
N(UNSPEC)+	C= I=1/2, Y=1 BARYON OF UNSPEC MASS
N(VEE)	C= A COLLECTION OF REACTIONS TO DIFFERENT NUMBERS OF STRANGE VISIBLE NEUTRAL VEES (NOT GAMMA CONVERSIONS). USE ONLY WITH DD=MULT
N(1250)0	C= SEE BERLAD 74
N(1250)+	C= SEE BERLAD 74
N(1350B)0	N(1350B)+
N(1470B)0	N(1470B)+
N(1470P11)0	N(1470P11)+
N(1520B)0	N(1520B)+
N(1520D13)0	N(1520D13)+
N(1535S11)0	N(1535S11)+
N(1590B)0	N(1590B)+
N(1670D15)0	N(1670D15)+
N(1688F15)0	N(1688F15)+
N(1700B)0	N(1700B)+
N(1700D13)0	N(1700D13)+

PARTICLE VOCABULARY - ORDERED ALPHABETICALLY (CONT'D)

N(1700S11)0	N(1700S11)+
N(1750P13)0	C= SEE METCALF 74
N(1750P13)+	C= SEE METCALF 74
N(1780P11)0	N(1780P11)+
N(1810P13)0	N(1810P13)+
N(1860)0	N(1860)+
N(1920B)0	N(1920B)+
N(1990F17)0	N(1990F17)+
N(2000F15)0	N(2000F15)+
N(2040D13)0	N(2040D13)+
N(2100D15)0	N(2100D15)+
N(2100S11)0	N(2100S11)+
N(2190B)0	N(2190B)+
N(2190G17)0	N(2190G17)+
N(2220H19)0	N(2220H19)+
N(2650B)0	N(2650B)+
N(3030B)0	N(3030B)+
N(3245B)0	N(3245B)+
N(3690B)0	N(3690B)+
N(3755B)0	N(3755B)+
0	C= OXYGEN NUCLEUS
ODD-PRONG	
OMEGA	C= MESON RESONANCE
OMEGAPI(1160)0	C= REPORTED MESON STATE DECAYING TO OMEGA PI
OMEGAPI(1160)+	C= REPORTED MESON STATE DECAYING TO OMEGA PI
OMEGAPI(1160)-	C= REPORTED MESON STATE DECAYING TO OMEGA PI
OMEGAPI(1240)0	C= REPORTED MESON STATE DECAYING TO OMEGA PI
OMEGAPI(1240)+	C= REPORTED MESON STATE DECAYING TO OMEGA PI
OMEGAPI(1240)-	C= REPORTED MESON STATE DECAYING TO OMEGA PI
OMEGA-	C= THE S=-3 BARYON
OMEGA*(UNSPEC)	C= S=-3 BARYON RESONANCE OF UNSPEC I, MASS
OMEGA*(UNSPEC)0	C= Y=-2 BARYON OF UNSPEC MASS, I
OMEGA*(UNSPEC)-	C= Y=-2 BARYON OF UNSPEC MASS, I
OMEGA*(UNSPEC)--	C= Y=-2 BARYON OF UNSPEC MASS, I
OMEGA(1675)	C= MESON RESONANCE
OS	C= OSMIUM NUCLEUS
P	
PA	C= PROTACTINIUM NUCLEUS
PARTON	C= HYPOTHESIZED PARTICLE
PB	C= LEAD NUCLEUS
PC(3300-3500)0	C= GENERIC NAME FOR EITHER MESON(3500) OR MESON(3270) (O.V.)
PD	C= PALLADIUM NUCLEUS
PH	C= PHOSPHORUS -- NOTE NAME IS NOT SAME AS CHEMICAL SYMBOL
PHI	
PHIPRIME	C= UNSPECIFIED RECURRENCE OF THE PHI
PIDEL(I=1/2)	C= PI DELTA I=1/2 FINAL STATE
PIDEL(I=3/2)	C= PI DELTA I=3/2 FINAL STATE
PILAM(I=1)	C= I=1 PI LAMBDA SYSTEM OF UNSPEC MASS, FOR PWA
PIN(I=1/2)	C= PI NUCLEON I=1/2 INITIAL STATE (AND ELASTIC FINAL STATE)
PIN(I=3/2)	C= PI NUCLEON I=3/2 INITIAL STATE (AND ELASTIC FINAL STATE). DO NOT USE FOR THE SINGLE PHYSICAL STATES (PI+ P) OR (PI- N)
PION	C= EXACTLY ONE PION OF UNSPECIFIED CHARGE
PIONS	C= TWO OR MORE PIONS
PION(S)	C= ONE OR MORE PIONS
PIPI(I=0)	C= PI PI ISOSPIN 0 STATE

PIPI(I=1)	C= PI PI ISOSPIN 1 STATE		
PIPI(I=2)	C= PI PI ISOSPIN 2 STATE		
PIPI(S20)++	PIPI(S20)--		
PIPI(S-WAVE)0			
PISIG(I=0)	C= I=0 PI SIGMA SYSTEM OF UNSPEC MASS, FOR PWA		
PISIG(I=0)	C= I=0 PI SIGMA SYSTEM OF UNSPEC MASS, FOR PWA		
PISIG(I=1)	C= I=1 PI SIGMA SYSTEM OF UNSPEC MASS, FOR PWA		
PIO			
PIOS	C= 2 OR MORE PIOS		
PIO(S)	C= 1 OR MORE PIOS		
PI+			
PI+S	C= TWO OR MORE PI+S		
PI+(S)	C= ONE OR MORE PI+S		
PI-			
PI-S	C= TWO OR MORE PIS		
PI-(S)	C= ONE OR MORE PI-S		
PM	C= PROMETHIUM NUCLEUS		
PO	C= POLONIUM NUCLEUS		
PR	C= PRASEODYMIUM NUCLEUS		
PRONG	C= A CHARGED TRACK ORIGINATING FROM THE PRIMARY INTERACTIONS. ASSUMES OBSERVED OR UNOBSERVED NEUTRALS MAY BE PRESENT, BUT ARE IGNORED UNLESS SPECIFIALLY MENTIONED.		
PRONGS	C= TWO OR MORE PRONGS		
PRONG(S)	C= ONE OR MORE PRONGS		
PROTONS	C= TWO OR MORE PROTONS		
PROTON(S)	C= ONE OR MORE PROTONS		
PSI(3700)0			
PSI(3772)0			
PSI(4030)0			
PSI(4100)0			
PSI(4400)0			
PT	C= PLATINUM NUCLEUS		
PU	C= PLUTONIUM NUCLEUS		
P(SPECT)	C= SPECTATOR PROTON		
QHIGH(1340)	QHIGH(1340)0	QHIGH(1340)+	QHIGH(1340)-
QLOW(1240)	QLOW(1240)0	QLOW(1240)+	QLOW(1240)-
QUARK	C= QUARK OF UNSPECIFIED CHARGE		
QUARK(1/3)	C= QUARK OF CHARGE 1/3		
QUARK(2/3)	C= QUARK OF CHARGE 2/3		
Q(1240-1400)0	Q(1240-1400)+	Q(1240-1400)-	
RA	C= RADIUM NUCLEUS		
RB	C= RUBIDIUM NUCLEUS		
RE	C= RHENIUM NUCLEUS		
RH	C= RHODIUM NUCLEUS		
RHOPI(S21)++	C= A RHO PI RESONANCE		
RHOPI(S21)--	C= A RHO PI RESONANCE		
RHOPRIME(1250)0	RHOPRIME(1250)+	RHOPRIME(1250)-	
RHOPRIME(1550)0	RHOPRIME(1550)+	RHOPRIME(1550)-	
RHOPRIME(1600)0	RHOPRIME(1600)+	RHOPRIME(1600)-	
RHO0	RHO+	RHO-	
RHO(2100)0	RHO(2100)+	RHO(2100)-	
RHO(2275)0	RHO(2275)+	RHO(2275)-	
RN	C= RADON NUCLEUS		
RU	C= RUTHENIUM NUCLEUS		
S	C= INTERMEDIATE SCALAR BOSON		
SB	C= ANTIMONY NUCLEUS		
SC	C= SCANDIUM NUCLEUS		
SE	C= SELENIUM NUCLEUS		

SHOWER	C= SHOWER TRACK		
SI	C= SILICON NUCLEUS		
SIGMA	C= SIGMA(1190) OF UNSPECIFIED CHARGE		
SIGMA0	SIGMA+	SIGMA-	
SIGMA/C(2430)0	C= CHARMED BARYON		
SIGMA/C(2430)+	C= CHARMED BARYON		
SIGMA/C(2430)++	C= CHARMED BARYON		
SIG(UNSPEC)	C= I=1, Y=0 PARTICLE OF UNSPEC MASS, CHARGE		
SIG(UNSPEC)0	C= I=1, Y=0 PARTICLE OF UNSPEC MASS		
SIG(UNSPEC)+	C= I=1, Y=0 PARTICLE OF UNSPEC MASS		
SIG(UNSPEC)-	C= I=1, Y=0 PARTICLE OF UNSPEC MASS		
SIG(1385P13)0	SIG(1385P13)+	SIG(1385P13)-	
SIG(1440B)0	C= I=1, Y=0 BUMPS		
SIG(1440B)+	C= I=1, Y=0 BUMPS		
SIG(1440B)-	C= I=1, Y=0 BUMPS		
SIG(1480B)0	C= I=1, Y=0 BUMPS		
SIG(1480B)+	C= I=1, Y=0 BUMPS		
SIG(1480B)-	C= I=1, Y=0 BUMPS		
SIG(1580D13)0	SIG(1580D13)+	SIG(1580D13)-	
SIG(1620B)0	C= I=1, Y=0 BUMPS		
SIG(1620B)+	C= I=1, Y=0 BUMPS		
SIG(1620B)-	C= I=1, Y=0 BUMPS		
SIG(1620S11)0	SIG(1620S11)+	SIG(1620S11)-	
SIG(1660P11)0	SIG(1660P11)+	SIG(1660P11)-	
SIG(1670B)0	C= I=1, Y=0 BUMPS		
SIG(1670B)+	C= I=1, Y=0 BUMPS		
SIG(1670B)-	C= I=1, Y=0 BUMPS		
SIG(1670D13)0	SIG(1670D13)+	SIG(1670D13)-	
SIG(1680P11)0	SIG(1680P11)+	SIG(1680P11)-	
SIG(1690B)0	C= I=1, Y=0 BUMPS		
SIG(1690B)+	C= I=1, Y=0 BUMPS		
SIG(1690B)-	C= I=1, Y=0 BUMPS		
SIG(1750S11)0	SIG(1750S11)+	SIG(1750S11)-	
SIG(1765D15)0	SIG(1765D15)+	SIG(1765D15)-	
SIG(1770B)0	SIG(1770B)+	SIG(1770B)-	
SIG(1770P11)0	SIG(1770P11)+	SIG(1770P11)-	
SIG(1840P13)0	SIG(1840P13)+	SIG(1840P13)-	
SIG(1880P11)0	SIG(1880P11)+	SIG(1880P11)-	
SIG(1900S11)0	SIG(1900S11)+	SIG(1900S11)-	
SIG(1915B)0	C= I=1, Y=0 BUMPS		
SIG(1915B)+	C= I=1, Y=0 BUMPS		
SIG(1915B)-	C= I=1, Y=0 BUMPS		
SIG(1915F15)0	SIG(1915F15)+	SIG(1915F15)-	
SIG(1920P13)0	SIG(1920P13)+	SIG(1920P13)-	
SIG(1940D13)0	SIG(1940D13)+	SIG(1940D13)-	
SIG(2000S11)0	SIG(2000S11)+	SIG(2000S11)-	
SIG(2030B)0	C= I=1, Y=0 BUMPS		
SIG(2030B)+	C= I=1, Y=0 BUMPS		
SIG(2030B)-	C= I=1, Y=0 BUMPS		
SIG(2030F17)0	SIG(2030F17)+	SIG(2030F17)-	
SIG(2070F15)0	SIG(2070F15)+	SIG(2070F15)-	
SIG(2080P13)0	SIG(2080P13)+	SIG(2080P13)-	
SIG(2100G17)0	SIG(2100G17)+	SIG(2100G17)-	
SIG(2140P13)0	SIG(2140P13)+	SIG(2140P13)-	
SIG(2210H11)0	SIG(2210H11)+	SIG(2210H11)-	
SIG(2215G19)0	SIG(2215G19)+	SIG(2215G19)-	
SIG(2250B)0	C= I=1, Y=0 BUMPS		
SIG(2250B)+	C= I=1, Y=0 BUMPS		
SIG(2250B)-	C= I=1, Y=0 BUMPS		

SIG(2260D15)0	SIG(2250D15)+ SIG(2260D15)-
SIG(2455B)0	C= I=1, Y=0 BUMPS
SIG(2455B)+	C= I=1, Y=0 BUMPS
SIG(2455B)-	C= I=1, Y=0 BUMPS
SIG(2620B)0	C= I=1, Y=0 BUMPS
SIG(2620B)+	C= I=1, Y=0 BUMPS
SIG(2620B)-	C= I=1, Y=0 BUMPS
SIG(3000B)0	C= I=1, Y=0 BUMPS
SIG(3000B)+	C= I=1, Y=0 BUMPS
SIG(3000B)-	C= I=1, Y=0 BUMPS
SM	C= SAMARIUM NUCLEUS
SN	C= TIN NUCLEUS
SPLIT-DIBARYON	C= BARYON NUMBER TWO STATE
SR	C= STRONTIUM NUCLEUS
STAR	C= HIGH CHARGED MULTIPLICITY FINAL STATE
STRANGE	C= UNSPECIFIED STRANGE PARTICLE
STRANGES	C= TWO OR MORE UNSPECIFIED STRANGE PARTICLES
STRANGE0	C= SAME AS STRANGE EXCEPT CHARGE IS SPECIFIED
STRANGE(S)	C= ONE OR MORE UNSPECIFIED STRANGE PARTICLES
SU	C= SULFUR NUCLEUS -- NOTE NAME IS NOT SAME AS CHEMICAL SYMBOL
SUPERNUCLEUS	C= SUPER HEAVY NUCLEUS
S0	C= INTERMEDIATE SCALAR BOSON
S+	C= INTERMEDIATE SCALAR BOSON
S-	C= INTERMEDIATE SCALAR BOSON
S*(993)	C= PIPI OR KKBAR S-WAVE
S(1255)0	C= I=1, S-WAVE K-AK ENHANCEMENT
S(1255)+	C= I=1, S-WAVE K-AK ENHANCEMENT
S(1255)-	C= I=1, S-WAVE K-AK ENHANCEMENT
S(1930)0	S(1930)+ S(1930)-
S(2340)0	S(2340)+ S(2340)-
T	C= TRITIUM NUCLEUS
TA	C= TANTALUM NUCLEUS
TACHYON	
TAU	C= HEAVY SEQUENTIAL LEPTON OF MASS ABOUT 1.9 GEV
TAU+	C= HEAVY SEQUENTIAL LEPTON OF MASS ABOUT 1.9 GEV, ENCODED AS HVY-LEPTON PRIOR TO NOV 1977
TAU-	C= HEAVY SEQUENTIAL LEPTON OF MASS ABOUT 1.9 GEV, ENCODED AS HVY-LEPTON PRIOR TO NOV 1977
TB	C= TERBIUM NUCLEUS
TC	C= TECHNETIUM NUCLEUS
TE	C= TELLURIUM NUCLEUS
TH	C= THORIUM NUCLEUS
TI	C= TITANIUM NUCLEUS
TL	C= THALLIUM NUCLEUS
TM	C= THULIUM NUCLEUS
T(2200)0	T(2200)+ T(2200)-
U	C= URANIUM NUCLEUS
UNSPEC	C= PARTICLE OF UNSPECIFIED TYPE. FOR PARTICLE SEARCH. NORMALLY ITS USE SHOULD BE ACCOMPANIED BY A DATA COMMENT DESCRIBING THE PARTICLE OR SEARCH. USE FOR PARTICLES NOT YET FOUND AND OF UNKNOWN PROPERTIES. PRINCIPALLY FOR USE IN PROP
UNSPEC+	C= SAME AS UNSPEC EXCEPT THAT IT HAS CHARGE+
UNSPEC-	C= SAME AS UNSPEC EXCEPT THAT IT HAS CHARGE-
UPSI(UNSPEC)	C= UNSPECIFIED UPSILON PARTICLE
UPSI(10010)0	C= UPSILON(10010)
UPSI(10060)0	C= UPSILON(10060)
UPSI(5970)0	C= LEDERMANS UPSILON TO E+ E-
UPSI(9410)0	C= UPSILON(9410)
UPSI(9500)0	C= UPSILON(9500)
U(2360)0	U(2360)+ U(2360)-

PARTICLE VOCABULARY - ORDERED ALPHABETICALLY (CONT'D)

VA	C= VANADIUM NUCLEUS -- NOTE NAME IS NOT SAME AS CHEMICAL SYMBOL
VEE	C= SEEN UNSPECIFIED NEUTRAL STRANGE PARTICLE DECAY
VEES	C= TWO OR MORE UNSPECIFIED NEUTRAL STRANGE PARTICLE DECAYS
VEE(S)	C= ONE OR MORE UNSPECIFIED NEUTRAL STRANGE PARTICLE DECAYS
VMESON	C= VECTOR MESON OF UNSPECIFIED MASS, CHARGE
VMESON0	C= VECTOR MESON OF UNSPECIFIED MASS
V(1110)0	C= VECTOR MESON SEEN IN PHOTOPRODUCTION
V(1370)0	C= VECTOR MESON SEEN IN PHOTOPRODUCTION
V(1550)0	C= VECTOR MESON SEEN IN PHOTOPRODUCTION
V(1750)0	C= VECTOR MESON SEEN IN PHOTOPRODUCTION
V(1765)0	C= STATE SEEN IN E+E- ANNIH
V(1780)0	
V(1820)0	C= STATE SEEN IN E+E- ANNIH
V(1840)0	C= STATE SEEN IN E+E- ANNIH
W	C= INTERMEDIATE VECTOR BOSON
WT	C= TUNGSTEN NUCLEUS -- NOTE NAME IS NOT SAME AS CHEMICAL SYMBOL
W0	C= INTERMEDIATE VECTOR BOSON
W+	C= INTERMEDIATE VECTOR BOSON
W-	C= INTERMEDIATE VECTOR BOSON
XE	C= XENON NUCLEUS
XI0	XI-
XI*3/2(UNSPEC)	C= I=3/2, Y=-1 BARYON OF UNSPEC MASS
XI*3/2(UNSPEC)0	C= I=3/2, Y=-1 BARYON OF UNSPEC MASS
XI*3/2(UNSPEC)+	C= I=3/2, Y=-1 BARYON OF UNSPEC MASS
XI*3/2(UNSPEC)-	C= I=3/2, Y=-1 BARYON OF UNSPEC MASS
XI*3/2(UNSPEC)--	C= I=3/2, Y=-1 BARYON OF UNSPEC MASS
XI*(UNSPEC)	C= I=UNSPEC, Y=-1 BARYON OF UNSPEC MASS
XI*(UNSPEC)0	C= Y=-1 BARYON OF UNSPEC MASS, I
XI*(UNSPEC)+	C= Y=-1 BARYON OF UNSPEC MASS, I
XI*(UNSPEC)-	C= Y=-1 BARYON OF UNSPEC MASS, I
XI*(UNSPEC)--	C= Y=-1 BARYON OF UNSPEC MASS, I
XI(UNSPEC)	C= I=1/2, Y=-1 BARYON OF UNSPEC MASS
XI(UNSPEC)0	C= I=1/2, Y=-1 BARYON OF UNSPEC MASS
XI(UNSPEC)-	C= I=1/2, Y=-1 BARYON OF UNSPEC MASS
XI(1530P13)0	XI(1530P13)-
XI(1630)0	XI(1630)-
XI(1760)0	XI(1760)-
XI(1820)0	XI(1820)-
XI(1870)0	XI(1870)-
XI(1940)0	XI(1940)-
XI(2030)0	XI(2030)-
XI(2130)0	XI(2130)-
XI(2250)0	XI(2250)-
XI(2400)0	XI(2400)-
XI(2500)0	XI(2500)-
XI(2600)0	XI(2600)-
XO(1430)	
XI(1440)0	XI(1440)+ XI(1440)-
XI(1795)0	XI(1795)+ XI(1795)-
X(1690)0	
X(1750)-	C= P=1=1 MESON DECAYING INTO 3PI
X(2500-3600)	C= ANY MESON BUMP SEEN IN PRODUCTION EXPERIMENTS IN THAT MASS REGION (EXCEPT THOSE ASSOCIATED WITH J/PSI, ETC.)
X(2750)0	C= SEEN IN E+ E- ANNIHILATIONS
X(2830)	C= JP=0- CHARMONIUM STATE
X(960)	C= NON-STRANGE MESON BUMP
Y	C= YTTRIUM NUCLEUS

YB	C= YETTERBIUM NUCLEUS
YPART	C= HPWF'S Y-PARTICLE, MASS 2-4 GEV, PROBABLY HADRON
Y*2(UNSPEC)	C= I=2, Y=0 BARYON OF UNSPEC MASS, CHG
Y*2(UNSPEC)++	C= I=2, Y=0 BARYON OF UNSPEC MASS
Y*(UNSPEC)	C= Y=0 BARYON OF UNSPEC ISOSPIN AND MASS
Y*(UNSPEC)0	C= Y=0 BARYON OF UNSPEC ISOSPIN AND MASS
Y*(UNSPEC)+	C= Y=0 BARYON OF UNSPEC ISOSPIN AND MASS
Y*(UNSPEC)-	C= Y=0 BARYON OF UNSPEC ISOSPIN AND MASS
ZN	C= ZINC NUCLEUS
ZR	C= ZIRCONIUM NUCLEUS
Z0(UNSPEC)	C= EXOTIC I=0, Y=2 BARYON OF UNSPEC MASS
Z0(UNSPEC)+	C= EXOTIC I=0, Y=2 BARYON OF UNSPEC MASS
Z0(1780)+	C= EXOTIC I=0, Y=2 BARYON
Z0(1865)+	C= EXOTIC I=0, Y=2 BARYON
Z1(UNSPEC)	C= EXOTIC I=1, Y=2 BARYON OF UNSPEC MASS
Z1(UNSPEC)0	C= EXOTIC I=1, Y=2 BARYON OF UNSPEC MASS
Z1(UNSPEC)+	C= EXOTIC I=1, Y=2 BARYON OF UNSPEC MASS
Z1(UNSPEC)++	C= EXOTIC I=1, Y=2 BARYON OF UNSPEC MASS
Z1(1900)0	C= EXOTIC I=1, Y=2 BARYON
Z1(1900)+	C= EXOTIC I=1, Y=2 BARYON
Z1(1900)++	C= EXOTIC I=1, Y=2 BARYON
Z1(2150)0	C= EXOTIC I=1, Y=2 BARYON
Z1(2150)+	C= EXOTIC I=1, Y=2 BARYON
Z1(2150)++	C= EXOTIC I=1, Y=2 BARYON
Z1(2500)0	C= EXOTIC I=1, Y=2 BARYON
Z1(2500)+	C= EXOTIC I=1, Y=2 BARYON
Z1(2500)++	C= EXOTIC I=1, Y=2 BARYON
Z*(UNSPEC)	C= EXOTIC I=UNSPEC, Y=2 BARYON OF UNSPEC MASS
Z*(UNSPEC)0	C= EXOTIC Y=2 BARYON OF UNSPEC MASS
Z*(UNSPEC)+	C= EXOTIC Y=2 BARYON OF UNSPEC MASS
Z*(UNSPEC)++	C= EXOTIC Y=2 BARYON OF UNSPEC MASS, I
0GAMMA	C= SPECIAL REACTIONS WITH NOT ALL PARTICLES SPECIFIED IN WHICH AUTHORS MAKE A SPECIAL POINT OF NOTING NO GAMMAS WERE PRODUCED, E.G. PI- P --> ANYTHING 0GAMMA, USE ONLY IN RARE CASES
0P	C= SPECIAL REACTIONS WITH NOT ALL PARTICLES SPECIFIED IN WHICH AUTHORS MAKE A SPECIAL POINT OF NOTING NO PROTONS WERE PRODUCED, E.G. PI- P - > ANYTHING 0P, USE ONLY IN RARE CASES
0PRONG	C= USE FOR REACTIONS WITH NO CHARGED PARTICLES ORIGINATING FROM PRIMARY VTX. IGNORES OBSERVED OR UNOBSERVED VEES.
0VEE	C= SPECIAL REACTIONS WITH NOT ALL PARTICLES SPECIFIED IN WHICH AUTHORS MAKE A SPECIAL POINT OF NOTING NO VEES WERE PRODUCED, E.G. PI- P --> ANYTHING 0VEE, USE ONLY IN RARE CASES
(CHARGED)	C= ZERO OR MORE CHARGED PARTICLES, DOES NOT INCLUDE NEUTRALS (SEE PRONG ENTRIES)
(CHGD-HADRONS)	C= ZERO OR MORE CHGD HADRONS
(ELECTRONS)	C= ZERO OR MORE ELECTRONS
(FRAGS)	C= ZERO OR MORE NUCLEAR FRAGMENTS
(GAMMAS)	C= ZERO OR MORE GAMMAS
(HADRONS)	C= ZERO OR MORE HADRONS
(HE)	C= ZERO OR MORE HE NUCLEI
(KAONS)	C= ZERO OR MORE UNSPEC KAONS
(LAMBDAS)	C= ZERO OR MORE LAMBDAS
(LEPTONS)	C= ZERO OR MORE UNSPECIFIED LEPTONS
(MESONS)	C= ZERO OR MORE MESONS
(MUONS)	C= ZERO OR MORE MUONS
(MUON)	C= EITHER ZERO OR ONE MUON
(NEUTRALS)	C= ZERO OR MORE NEUTRAL PARTICLES -- DO NOT USE FOR MM.GE.0

(NUCLEONS)	C= ZERO OR MORE UNSPEC NUCLEONS
(NUS)	C= ZERO OR MORE UNSPECIFIED NEUTRINOS
(N)	C= ZERO OR MORE NEUTRONS
(PIONS)	C= ZERO OR MORE PIONS
(PIOS)	C= 0 OR MORE PIOS
(PI+S)	C= ZERO OR MORE PI+S
(PI-S)	C= ZERO OR MORE PI-S
(PRONGS)	C= ZERO OR MORE PRONGS PLUS POSSSIBLE NEUTRALS
(P)	C= ZERO OR MORE PROTONS
(STRANGES)	C= ZERO OR MORE UNSPECIFIED STRANGE PARTICLES
(VEES)	C= ZERO OR MORE UNSPECIFIED NEUTRAL STRANGE PARTICLE DECAYS
.GT.1GAMMA	
.GT.1PRONG	C= MORE THAN ONE PRONG
.GT.10PRONG	C= MORE THAN 10 PRONGS
.GT.11PRONG	
.GT.12PRONG	
.GT.13PRONG	C= MORE THAN 13 PRONGS
.GT.14PRONG	
.GT.15PRONG	
.GT.16PRONG	C= MORE THAN 16 PRONGS
.GT.17PRONG	C= MORE THAN 17 PRONGS
.GT.18PRONG	
.GT.19PRONG	
.GT.2GAMMA	
.GT.2PRONG	C= MORE THAN TWO PRONGS
.GT.20PRONG	
.GT.21PRONG	
.GT.22PRONG	C= MORE THAN 22 PRONG
.GT.23PRONG	
.GT.24PRONG	
.GT.25PRONG	
.GT.26PRONG	
.GT.27PRONG	
.GT.28PRONG	
.GT.29PRONG	
.GT.3GAMMA	
.GT.3PRONG	C= MORE THAN 3 PRONGS
.GT.30PRONG	
.GT.4GAMMA	
.GT.4PRONG	C= MORE THAN 4 PRONGS
.GT.5GAMMA	
.GT.5PRONG	C= MORE THAN 5 PRONGS
.GT.6GAMMA	
.GT.6PRONG	C= MORE THAN 6 PRONGS
.GT.7GAMMA	
.GT.7PRONG	C= MORE THAN 7 PRONGS
.GT.8GAMMA	
.GT.8PRONG	C= MORE THAN 8 PRONGS
.GT.9GAMMA	
.GT.9PRONG	C= MORE THAN 9 PRONGS
.LT.10PRONG	
.LT.2PRONG	
.LT.3PRONG	
.LT.36PRONG	
.LT.4PRONG	
.LT.5PRONG	
.LT.5PRONG	
.LT.7PRONG	
.LT.8PRONG	
.LT.9PRONG	

A Short Summary of Beams

Following are tables of beams (not including test beams) at the various laboratories. Much of the information for U.S. laboratories is an updating of that in an informal report compiled by R. Phillips, "Beams at U.S. High Energy Physics Laboratories," Brookhaven report BNL-22160 (July 1976). Other information below was obtained from:

ANL Charles E. W. Ward

BNL Peter Wanderer

CERN J. V. Allaby (editor), "Experiments at CERN in 1978," August 1978

DESY Franz Peters

FNAL Timothy E. Toohig

KEK A. Kusumegi, "High Energy Physics Program of KEK Proton Synchrotron in FY 1977," KEK report EPC 78-01 (May 1978)

KEK Beam Channel Group, "KEK Beam Lines from 1977 to 1978," KEK internal report BM-07-01-78 (July 1978)

SERP Viktor A. Yarba

SLAC Lewis P. Keller

ARGONNE ZGS BEAMS

All beams are polarized protons or deuterons, direct from the accelerator.
The accelerator is scheduled for shutdown on 1 October 1979.

Beam number	Momentum range (GeV/c)	Maximum intensity (protons/pulse)	Beam polarization orientations*	Comments
1	1-12	10^{11}	N	N-type polarized target
2	1-6	10^{10}	N	—
5	1-12	10^{10}	N	—
21S	1-12	10^{7}	N, L**	Effective mass spectrometer
22	1-12	10^{7}	N, S, L**	S-, L-type polarized target
23	1-12	10^{10}	N***	N-type polarized target

* Polarization orientation conventions: N = vertical, transverse to beam direction
L = longitudinal, along beam direction
S = transverse, orthogonal to N and L directions

** S- and L-type polarizations available for deuteron beams only up to 3.7 GeV/c.

*** S-type polarizations could be available later.

BROOKHAVEN AGS BEAMS

The nominal repetition rate used to calculate flux per second is 0.4/sec; counting rates can be estimated from the nominal beam spill time of 1 second.

	Beam	Momentum range (GeV/c)	± Δp/p (%)	Production angle (°)	Ω (msr)	Beam length (m)	Particles	Flux in thousands per second per 10^{12} protons on target → at (GeV/c)		Comments
↑	B4	1.5-6	3	3	0.2	81	K^+/K^-	90/45	4	Usually 2×10^{12} ppp; $\pi/K \sim 3$ in K beam
		1.5-6.6					$\bar{p}$	130		
							π^+/π^-	$1.7\times10^4/1.2\times10^4$		
	B2	1.5-9 ($\bar{p}$)		[otherwise same characteristics as B4 (above)]						To multiparticle spectrometer
Separated	C2, C4	≤ 1.1	2	10.5	2.6	15	K^+/K^-	240/80	0.75	Usually 2×10^{12} ppp; $\pi/K \sim 10$ in K beam
							$\bar{p}$	2		
							π^+/π^-	$7\times10^4/6\times10^4$		
	C6, C8	≤ 0.8	2.5	5	15	15	K^+/K^-	1700/560	0.75	Operational Oct 78
							$\bar{p}$	14		
							π^+/π^-	$5\times10^5/4\times10^5$		
↓ ↑	A1	5-28.5	1.7	0	0.3	130	K^+/K^-	460/17	18	To multiparticle spectrometer; 10^{12} ppp
							$\bar{p}$	1.5		
							π^+/π^-	$1.3\times10^4/3000$		
Unseparated	B1	6-28.5	1.7	0	0.3	75	K^+/K^-	1500/350	10	Usually 2×10^{12} ppp
							$p/\bar{p}$	$4\times10^4/85$		
							π^+/π^-	$4\times10^4/2\times10^4$		
	C1	6-24	5	0	0.8	61	π^-	2300	16	Usually 2×10^{12} ppp; $\mu/\pi \sim 3\%$
↓ ↑	A3	1-10		6	0.12	6.7	K_L	10^4	1-10	Typically 10^{12} ppp; alternates with A1
Neutral	B5	6-20		4	0.4	2.6	Λ/n	$300/4\times10^5$	6-20	Typically 10^{10} ppp
							K_S/K_L	$27/2\times10^4$		
	U	1.5 (peak)					$\nu/\bar{\nu}$	$10^6/5\times10^5$ per m^2		Typically 9×10^{12} ppp; to 7' b.c. and counter area; flux averaged over 0.7 m radius
↓										

CERN PS BEAMS

Beam	Momentum range (GeV/c)	Particles	Approximate flux, particles per pulse → at (GeV/c)	Comments
e_{15}	6-24	p	4.5×10^{12}	Primary beam feeding the others below
p_{17}	5-14	π^-	2×10^{6} * 10	
k_{22}	≤ 1	K^-	10^{4} * 0.7	Enriched beam (electrostatic separation)
k_{23}	0.5-1.0	$\bar{p}$	5×10^{3} * 0.8	"
k_{24}	≤ 1.5	K^-	4×10^{4} * 1.5	Design values

*Normalized for $\Delta p/p = \pm1\%$ and 10^{12} protons incident on target (fluxes also depend on the external targets used).

CERN SPS BEAMS

Beams in the West Area Neutrino Facility

Beam name	Parent momentum (GeV/c)	$\langle E_\nu \rangle$ (GeV)	Intensity of beam and event rate for 10^{13} incident protons at 400 GeV*)	Beam type
N1	Spectrum up to 400 GeV/c	20	∿ 6×10^{18} ν 0.28 ev/ton ∿ 4×10^{18} $\bar{\nu}$ 0.06 ev/ton	Wide-band beam
N3	+275	67	1.5×10^{8} ν_π 2.4×10^{-3} ev/ton	Narrow-band or dichromatic beam
		200	6.5×10^{7} ν_K 3.3×10^{-3} ev/ton	
	-275	67	4.7×10^{7} $\bar{\nu}_\pi$ 2.6×10^{-4} ev/ton	
		200	8.3×10^{5} $\bar{\nu}_K$ 1.4×10^{-5} ev/ton	
	+200	53	7.6×10^{8} ν_π 1.0×10^{-2} ev/ton	
		160	1.4×10^{8} ν_K 5.4×10^{-3} ev/ton	
	-200	53	2.7×10^{8} $\bar{\nu}_\pi$ 1.2×10^{-3} ev/ton	
		160	8.1×10^{6} $\bar{\nu}_K$ 1.1×10^{-4} ev/ton	
	+140	41	1.6×10^{9} ν_π 1.6×10^{-2} ev/ton	
		120	8.8×10^{8} ν_K 5.4×10^{-3} ev/ton	
	-140	41	8.0×10^{8} $\bar{\nu}_\pi$ 2.7×10^{-3} ev/ton	
		120	2.4×10^{7} $\bar{\nu}_K$ 2.4×10^{-4} ev/ton	
	+60	22	1.6×10^{9} ν_π 8.6×10^{-3} ev/ton	
		56	1.1×10^{8} ν_K 1.5×10^{-3} ev/ton	
	-60	22	1.5×10^{9} $\bar{\nu}_\pi$ 2.7×10^{-3} ev/ton	
		56	6.8×10^{7} $\bar{\nu}_K$ 3.1×10^{-4} ev/ton	

*) The beam is defined as that flux falling inside a circle of diameter 1.5 m at the position of BEBC.

Beams in the North Area

Beam name	Maximum momentum (GeV/c)	Intensity of beam for 10^{12} interacting protons	Beam type
H2/P2	340 (H2)	2×10^{8} π^+ at 200 GeV/c	High-energy hadron or attenuated proton beam
	400 (P2)	8×10^{7} π^- "	
H4/E4	340	2×10^{8} π^+ at 200 GeV/c 8×10^{7} π^- " 8×10^{6} $e^\pm$ at 150 GeV/c	High-energy hadron or electron beam
H6	200	4×10^{8} π^+ at 150 GeV/c 1×10^{8} π^- "	Medium-energy hadron beam
H8/P8	340 (H8)	3×10^{8} π^+ at 200 GeV/c	High-energy hadron or proton beam
	400 (P8)	1×10^{8} π^- "	
M2	300	1×10^{8} μ^+ at 200 GeV/c 4×10^{7} μ^- "	High-intensity muon beam
P0	400	Full-intensity proton beam	Proton beam for future developments

Beams in the West Area

Beam name	Maximum momentum (GeV/c)	Intensity of beam for 10^{12} interacting protons	Beam type
S1	40	∿ 10^{6} $K^\pm$ (10-30 GeV/c) ∿ 10^{6} $\bar{p}$ (20-40 GeV/c)	RF separated beam to Omega spectrometer
E1/H1	80/100	7×10^{6} $e^\pm$ at 80 GeV/c 4×10^{8} π^+ " 1×10^{8} π^- "	Electron or hadron beam: south branch to Omega spectrometer, north branch to other experiments
P1	200	10^{9}-10^{12} protons	Attenuated proton beam; used to produce Y1 & H5
Y1	150	3×10^{3} $\Sigma^\pm$ at 150 GeV/c (for 10^{9} incident protons)	Charged hyperon beam
H5	80	6×10^{7} π^+ at 80 GeV/c 2×10^{7} π^- "	Medium-energy hadron beam
H3	150	2×10^{6} π^+ at 100 GeV/c 6×10^{7} π^- "	High-energy hadron beam
S3	150	Separated K^+ up to 75 GeV/c Separated K^- + $\bar{p}$ " 110 GeV/c	RF separated beam to BEBC bubble chamber

DESY BEAMS

Nearly all work is directed toward testing equipment for PETRA experiments.

Beam number	Momentum (GeV/c)	$\Delta p/p$ (%)	Particle	Flux	Comments
8, 22	0.8-7.2	~ 1	e^-	$\leq 10^{11}$	Flat top available for long spill of small $\Delta p/p$
10, 20, 24	$\leq$ 7.5	brems.	γ	$\leq 10^{12}$ equivalent quanta	

FERMILAB BEAMS

The nominal repetition rate used to calculate flux per second is 0.1/sec; counting rates can be estimated from the nominal beam spill time of 1 second.

Beam	Momentum range (GeV/c)	± Δp/p (%)	Production angle (mr)	Ω (msr)	Particles	Flux in thousands per second per 10^{12} protons on target →	at (GeV/c)	Comments
p west p central p east	50-500				p	$< 2 \times 10^{13}$ per pulse		Note that flux units are different here
ITA	8-500				p			Internal primary protons, gas jet targets
M1E, W	20-400	0.1-1.5	0-3.5	0.002	π^-	4000	200	Medium resolution beam
M2	20-400	0.1-1.4	0.3-1.1	0.0002	p	3000	200	
					π^-	300		
M4	35-200	4	7-8	0.001	K^-	30000	115	
					π^-	100		
M6E, W	20-200	0.?1-1.0	0-3	0.0013	π^-	4000	200	E to single-arm spectrometer, W to multiparticle spectrometer
N1	50-275	2	0	0.004-0.016	μ^+	3	150	Also can provide hadrons; to muon/ hadron spectrometer
N3	100-400	0.07-1.2	0-1	0.0003	hadrons			To 30" b.c. and hybrid spectrometer
N5	100-400	0.02-0.6	0-1	0.0003	hadrons			To 15' b.c.
P1	20-200	10	0-8	0.008	π^-	10^9	125	
P2	40-300	2.3	0-2	0.0012	e^-	210	100	Can also provide tagged photons
M3	300 (peak)		0.3-1.1	$\sim 10^{-7}$	n	200/cm^2	total	
P1	300 (peak)		0	40	n	25	> 40	Can also provide tagged photons
								$\nu/\bar{\nu}$ beams for general use or 15' b.c.
NO-H	≤ 500		0	2.8	$\nu/\bar{\nu}$	30000/10000 per m^2	total	Fast spill only; horn focus; spectrum peaks at 17 GeV
NO-D	200-250	< ±25		0.01	$\nu/\bar{\nu}$	600/200 per m^2	total	Narrow band, sign selected; spectrum depends on tune
NO-T	50-300	2-30	0.5	0.004-0.016	$\nu/\bar{\nu}$	2300/800 per m^2	total	Broad band, quadrupole focus; spectrum depends on tune; ΔΩ depends on momentum

KEK BEAMS

The repetition rate is 0.5/sec.

Beam	Momentum range (GeV/c)	± Δp/p (%)	Production angle (°)	Ω (msr)	Beam length (m)	Particles	Typical flux in particles per pulse → at (GeV/c)		Comments
EP1	4-9 (13)					p	5×10^{10}		Fast extraction; feeds the K1 beam
EP2	4-9 (13)					p	10^{12}		Slow extraction; branches feed the K2, K3, and π-μ beams
π2	2-4.3	1	10	0.594	31.3	$p/\bar{p}$	$10^5/10^3$	3	Internal target beam
						π^+/π^-	$6\times10^5/2\times10^5$		
T1	0.5-2.3	2	23	0.16	18.8	$p/\bar{p}$	$4\times10^5/50$	2	Internal target beam
						π^+/π^-	$1.5\times10^5/10^5$		
K1	2-3.5	0.5	2.8	0.039	84.9	K^+/K^-	30/15	3	To bubble chamber
	2-8					p	400		
	2-4					$\bar{p}$	30		
	2-4					π^+	400		
	2-6					π^-	300		
K2	1-2	3	0	1.02	27.9	K^+/K^-	$10^6/5.4\times10^5$	2	
						$p/\bar{p}$	$4\times10^7/1.2\times10^5$		
						π^+/π^-	$6\times10^7/3\times10^7$		
K3-S	0.5-1.0	3	0	7.2	14.7	K^+/K^-	$10^5/2.2\times10^4$	0.8	Fluxes are for the S (short) mode of operation
(K3-L)	(")	(1.8)	(")	(3.0)	(16.5)	$p/\bar{p}$	$7\times10^7/3.5\times10^3$		
						π^+/π^-	$5\times10^7/5\times10^7$		
π-μ	0.15-0.3		83	20		$\pi^\pm$	10^6	0.15	
						$\mu^\pm$	10^4		

SERPUKHOV BEAMS

Beam number	Momentum range (GeV/c)	Particles	Intensity per 10^{12} ppp for dp/p = 1%	Comments
2/14	35-65	hadrons (+/-)	5×10^{6} at 40 GeV/c	
		e^-	4×10^{5} " " "	
4	25-50	hadrons (-)	5×10^{6}	
4N	$\leq$ 70	neutrals	10^{7} integral	
18	3-17	hadrons (+)	10^{8}	
		hadrons (-)	10^{5}	
16	10-40	μ^-	2×10^{6}	
19	70	protons		Slow extraction
20	0.5-2.5	hadrons (+/-)	10^{8}	
7	$\leq$ 70	π, K, p		R.f. separated up to 40 GeV/c; to hydrogen bubble chamber
9	$\leq$ 35	π, K, p		R.f. separated up to 25 GeV/c; to hydrogen bubble chamber
8	70 ($\bar{E}_\nu$ = 5-6)	neutrinos	10^{10} integral	Fast ejection for wide-band neutrino beam

SLAC BEAMS

Unless otherwise noted, flux per second is calculated using a repetition rate of 180/sec and using the "open" value (= in ⩽) in the Δp/p column; counting rates can be estimated from the nominal beam spill time of 1.6 μsec.

Beam number	Momenta (GeV/c)	Δp/p (%)	Production angle (°)	Ω (msr)	Particles	Flux in thousands per sec per 40 mA → at (GeV/c)	Facility	Comments
23	7, 12	⩽ 2	1.5	0.025	K^+/K^-	1/0.5 at 12	Streamer chamber	Separated; very small π or p contamination in K
	9.4				$p/\bar{p}$	2/0.4 at 9.4		
	1, 15				π^+/π^-	60/60 at 15		
23'	1-15	⩽ 2	0	0.1	μ^+	200 at 14	"	$\pi/\mu = 5\times10^{-5}$; 360 pps
21	1-16	⩽ 4	1	0.03	K^+/K^-	3/1.5 at 10	LASS	Separated; $\pi/K \sim 1/30$, $\pi/\bar{p} \sim 1/14$
					$p/\bar{p}$	7/1		
					π^+/π^-	200/200		
					e^-	2000		
	1-8				e^+	2000 at 2.5		
14	1-18	⩽ 3	1	0.02	K^+/K^-	0.2/0.1 at 10	40" b.c. (hybrid facility)	Separated; ~ 10 pps
					$p/\bar{p}$	0.2/0.04		
					π^+/π^-	6/6		
14'	1-17	⩽ 4	0	0.02	μ^-	1 at 16	"	$\pi/\mu = 6\times10^{-5}$; ~ 10 pps
19	1-21	± 0.25			e^-	⩽ 5×10^6 per pulse at all	—	Very pure; 360 pps; 0.5 mm diameter beam
3	1-14	± 0.1-1.0			e^+	⩽ 2×10^{10} " at all	1.6, 8, 20 GeV/c spectrometers	180 pps \ All fluxes at 360 pps \ Δp/p = ± 0.25% Longitudinally polarized (76 ±3 measured)
	⩽ 22	± 0.1-1.0			e^-	5×10^{11} " at all		
	3.237j (j= 1,2,···6)				e^-	10^9 " at all		
1	5-15	6-25			γ	⩽ 2×10^8 eq. qu. 5-15	"	Coherent lin. pol. spike
	5-20	brems.			γ	4×10^9 " " 20 (e^-)		0° bremstrahlung \ (50-80%)
	15-20	brems.			γ	2×10^7 " " 15-20		Polarized by attenuation (typically 25% at 15 GeV/c)