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WorkOp-III:94 Synopsis Final-Contribution Mini Plots and Tables

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June 1995

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WorkOp-III:94 SYNOPSIS

FINAL-CONTRIBUTION MINI PLOTS AND TABLES

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D Division

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WorkOp-III:94 is the third in a series of Opacity Workshops conceived and orchestrated by Franklin Serduke in collaboration with Carlos Iglesias.

The developers of twenty-one codes participated. Thirty-eight plasmas were selected for their relevance to problems of interest or for the challenge they would pose to the models. Frequency-dependent absorption coefficients, mean opacities, ionization distributions and other detailed information were submitted, discussed and resubmitted.

This third WorkOp was hosted and organized beautifully by A. Rickert, K. Eidmann and J. Meyer-ter-Vehn of the Max Planck Institute for Quantum Optics in Garching, Germany in March 1994. The first WorkOp was held at the Rutherford Appleton Laboratory in England in August 1989. The second was held under the aegis of the French CEA and met at the CECAM facility at Orsay, France in June 1991. Impetus for holding this third workshop with its broader participation was provided by R. W. Lee of LLNL.

The submitted data were collected by Alexander Rickert of MPQ. Franklin Serduke digested and plotted the over 120 megabytes of data in formats of his design for the preliminary pre-workshop report, for interactive plotting during the workshop, and for the final report using codes that he had written and that have evolved over this WorkOp series.

This synopsis contains a subset of the information presented at the workshop and in the considerably more extensive, forthcoming, final report. A quick overview of the mean opacities that were submitted can be obtained from the graphical-table plots of the Rosseland and Planck means for all the cases. In addition, for each of the 38 plasma cases, there is a single page of mini plots of all total absorption coefficients submitted plus tables of integral quantities such as mean opacities, chemical potential and average ionization stage.

MASTER

I. DISCUSSION

A. History and Overview

Expanding interest in radiative opacities to help address questions in astrophysics, laser-plasma studies and other areas has led to an increase in the number of opacity models at institutions throughout the world. The growth of computing capacity coupled with the development of new theoretical approaches to calculating bound-bound opacity has fueled this expansion. In order to provide both developers and users with a sense of the current status of these developments, the International LTE Opacity Workshops and Code Comparison Studies were started by the author with support from Carlos Iglesias, also of LLNL.

The first workshop, WorkOp-I:89, met at the Rutherford-Appleton Laboratory in the United Kingdom in August 1989; Steven Rose of RAL served as host. WorkOp-II:91 convened at the CECAM facility at Orsay, France from 3 to 7 June 1991; its sponsors were Jean Lachkar, Michel Vuillemin, and Gilles Damamme of the CEA facility, the Centre d'Études de Limeil-Valenton. WorkOp-III was beautifully hosted and superbly organized by Alexander Rickert, Klaus Eidmann, and Jurgen Meyer-ter-Vehn of the Max Planck Institute for Quantum Optics in Garching, Germany, from 7-11 March 1994. The developers of over twenty different codes participated in this workshop. Their names, affiliations and code names are presented in Table 1. Without their extensive efforts and cooperation, this entire workshop would not have been possible.

Preparation for the third workshop started ten months prior to the meeting and followed the model of the earlier workshops.

(1) Plasma test cases were selected after well over a month of iterations. These cases were chosen to stretch the theoretical opacity models in interesting directions, to compare with experiments or to address challenging astrophysical problems. This is a critically important phase to the ultimate success of the workshop.

(2) Calculations were submitted by participants in the predefined WorkOp format about two to three months before the workshop. These calculations were also accompanied by brief code descriptions of the individual models.

(3) All results were plotted on common scales to facilitate intercomparison and returned to participants about 6 weeks before the meeting. It has traditionally been requested that these preliminary results not be distributed nor used in publications. This is done to reduce the potential for the unintended release of results with trivial mistakes. In turn, this appears to encourage participation of code developers whose models are still evolving.

(4) The workshop met on 7-11 March 1994 after contributors had an opportunity to study the preliminary report. Participants described features of their codes in short presentations, then discussed and examined further their results when compared with the body of other calculations. Invited talks on subjects relating to opacity applications, calculation and measurement were presented. All of the submitted calculations were available for immediate plotting on Macintosh personal computers; this permitted dynamic discussions in small interaction groups. During the plenary sessions, discussions were stimulated as comparisons of immediate interest or specific details of calculations could be isolated and shown on a large screen by a Macintosh-driven projector. The WorkOp practice of comparing code calculations with available experimental data was continued and was a highlight of the gathering.

(5) Following the meeting, at the discretion of the participant, calculations and code descriptions could be resubmitted prior to the preparation of the final report. This was done in the spirit of the United States Congress where congressmen and their staffs may edit and correct remarks or speeches made on the floor before they are published in the Congressional Record. Over 50% of the calculations were resubmitted.

The list of cases that were addressed is found in Table 2. This collection of case studies covered plasmas ranging from hydrogen to gold plus some mixtures. A number of the case studies were addressed in earlier workshops. For the first time, a direct comparison of LTE and NLTE computations was done. The cases were selected to address the following issues:

- 1) comparison with experiments
 - laser-plasma experiments from NOVA, HELEN and PHEBUS
 - recently-reported Russian Rosseland-mean measurements with $\pm 15\%$ error bars
 - plasmas that govern stellar pulsation
 - a classic hydrogen experiment done nearly 25 years ago

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- 2) modelling a sequence of 20-eV iron plasmas that covers several orders of magnitude in density to examine the limits of validity of the statistical UTA and STA approaches
- 3) systematic coverage of density and temperature matrices for C, Ge and Au
- 4) comparisons of LTE and NLTE calculations at the same temperature and density
- 5) computation of astrophysical mixtures and other plasmas of astrophysical interest

Virtually all of the codes are at some level of active development. The notable exception is the 1977 Los Alamos opacity code (denoted LANL77 in the plots). Its results represented the state of the art well into the 1980s and are presented as an historical backdrop to more recent developments now incorporated in many of the other models. Thanks are due to Norm Magee of LANL for providing these results as he had done for previous workshops.

All participants sent contributions in the standard WorkOp format. It is an ASCII file that includes values of Rosseland and Planck mean opacities as well as partial Rosseland and Planck means. Also included are the chemical potential, the mean ionization and the ion-charge-state distribution. The bulk of the information submitted is in the form of tabular absorption coefficients up to a photon energy of 20 keV on an energy grid the authors feel adequately represents their work. The tables consist of the photon energy, the total absorption (κ_{total}) plus its components, the bound-bound, bound-free, free-free and scattering contributions.

B. Presentation of Submittals

Presenting the results of over 450 plasma opacity calculations in a meaningful and very compact form is guaranteed to result in a compromise. We have chosen to present the information in two groups. Graphical tables of mean opacities are shown in Section II which starts on page 9. Tables of submitted information together with mini plots of the total absorption coefficient are found in Section III which begins on page 18. The cases are presented in the same order as they are listed in Table 2 on page 6. Page numbers of mean opacity plots and of the two-page summaries are in the last column of Table 2. Definitions of the Rosseland and Planck mean

opacities as computed from the tabular contributions are discussed in the Appendix to this section.

C. Concluding Remarks

The need for these workshops is stimulated by the needs of both developers and users of radiative opacities. They provide some of the raw information from which to evaluate opacity models and their range of applicability. These workshops provide an excellent snapshot of the current state of the art.

This compendium provides a compact summary overview of the results of WorkOp-III:94. The term "compact" may seem unusual to describe a report of nearly 100 pages but an enormous quantity of information was submitted. There were over 450 individual plasma calculations reported and the submitted data occupied over 120 megabytes. This synopsis is also intended to pique the interest of the reader into obtaining the more extensive, forthcoming, final report[†]. This final report includes a number of additional interesting sections:

- 1) brief descriptions of each of the codes written by the authors
- 2) larger plots of total opacities
- 3) plots of the bound-free, free-free and scattering components
- 4) comparisons with experimental data for several x-ray transmission experiments
- 5) linear plots of the Rosseland Transparency, the integrand of the Rosseland Mean Opacity integral. This quantity highlights regions of the photon spectrum that contribute most to the Rosseland mean free path.
- 6) single full-page plots of a Rosseland-mean-preserving, continuous, multigroup opacity of all contributions for a given test case
- 7) information on the proceedings of the workshop itself
- 8) a group photo of all WorkOp-III participants at Garching. A list of their names is found in Table 3 of this compact synopsis.

Contributors have access to all numerical files via ftp to the Max Planck Institute for Quantum Optics. Non-participants are encouraged to contact the individual contributors directly.

[†] WorkOp-III:94 Final Report, edited by A. Rickert, K. Eidmann, J. Meyer-ter-Vehn, F.J.D. Serduke and C.A. Iglesias, Max-Planck-Institut für Quantenoptik Report MPQ 204, Hans-Kopferman-Strasse 1, 85748 Garching, Germany (to be published 1995)

Appendix: FORMULAS FOR ROSSELAND AND PLANCK MEANS

The total absorption coefficient, also called the opacity or the extinction coefficient, is a function of the photon energy ν , plasma density ρ , and temperature T ; it is a sum of four components

$$\kappa_{\text{total}}(\rho, T, \nu) = \kappa_{\text{bound-bound}}(\rho, T, \nu) + \kappa_{\text{bound-free}}(\rho, T, \nu) + \kappa_{\text{free-free}}(\rho, T, \nu) + \kappa_{\text{scattering}}(\rho, T, \nu)$$

where the bound-bound, bound-free and free-free components include the stimulated emission correction.

The normalized Planck Function may be written

$$B(\nu, T) = 15/(\pi^4 T) u^3 / (e^u - 1)$$

where the dimensionless variable $u = \nu/T$. The partial derivative of B with respect to T appears in the integrand of the Rosseland mean.

$$\begin{aligned} B'(\nu, T) &= \partial B(\nu, T) / \partial T \\ &= 15/(4\pi^4 T) u^4 e^u / (e^u - 1)^2 \end{aligned}$$

As noted, both B and B' as written are normalized

$$\int_0^\infty d\nu B(\nu, T) = 1$$

$$\int_0^\infty d\nu B'(\nu, T) = 1.$$

In terms of these quantities, the Rosseland Mean Opacity

$$\kappa_{\text{Rosseland}}(\rho, T) = \int_0^\infty d\nu B'(\nu, T) / \kappa_{\text{total}}(\rho, T, \nu),$$

and the Planck Mean Opacity

$$\kappa_{\text{Planck}}(\rho, T) = \int_0^\infty d\nu B(\nu, T) (\kappa_{\text{total}}(\rho, T, \nu) - \kappa_{\text{scattering}}(\rho, T, \nu)).$$

We define the Rosseland Transparency (the integrand of $\kappa_{\text{Rosseland}}$) as

$$T_{\text{Rosseland}}(\rho, T, \nu) = B'(\nu, T) / \kappa_{\text{total}}(\rho, T, \nu).$$

This quantity, $T_{\text{Rosseland}}$, is plotted in the final report for all contributions and shows clearly which frequency regions contribute to the Rosseland Mean (or the Rosseland mean-free path). It also shows several situations where two codes get the same Rosseland mean but for different reasons.

The lower limits of the integrals for the Rosseland and Planck mean are shown to be zero. In practice, tabular submissions were integrated from the first point submitted above the plasma frequency. The plasma frequency is a function of the free electron density and differs for the various contributions to a given case study. These integrals of the submitted tabular absorption coefficients are found in the tables of section III under the headings KrossW and KplnkW; these may be compared with the contributor's mean opacity calculations denoted Kross and Kplnk in the same tables.

Partial Rosseland and Planck means replace κ_{total} or $\kappa_{\text{total}} - \kappa_{\text{scattering}}$, respectively, in the Mean Opacity integrals, with the indicated absorption coefficient components.

Table 1. Contributors to WorkOp-III:94, their affiliations and codes

Code Name	Authors	Affiliation	# cases [†] submitted
CASSANDRA	B.J. Crowley, S.J. Davidson, D.K.K. Landeg and D. Rowley	AWE Aldermaston, UK	24
CORONA	T. Nishikawa, H. Takabe and K. Mima	Okayama University, Japan	31
DEIRA*	M. Basko	IITEP Moscow, Russia	26*
EOSOPA	P. Wang and J.J. Macfarlane	FTI Univ. of Wisconsin, USA	15
HAFPO	T. Blenski	École Polytechnique, Lausanne, Switzerland	3
HOPE	B. Rozsnyai	LLNL, USA	32+2
IAPCM105	Y. Sun, G. Han and S. Li	IAPCM Beijing, China	15
IMP	S.J. Rose	Rutherford-Appleton Lab UK	8
JIMENA	E. Minguez	DENIM Madrid, Spain	17+1
LANL77	W.F.Huebner, A.J. Merts and N.H. Magee	LANL, USA	20
LEDCOP	N.H. Magee, A.L. Merts, J.J. Keady and D.P. Kilcrease	LANL, USA	17+1
MCDCA (MONTECARLO)	B.G. Wilson, J. Albritton and D. Liberman	LLNL, USA	23+4
OPAL	C.A. Iglesias, F.J. Rogers and B.G. Wilson	LLNL, USA	26+4
RACHEL	L. Drska and M. Sinor	Tech.Univ. Prague, Czech Rep.	23
SADIR	B.G. Wilson	LLNL USA	6+3
SAPHIR	A. Rickert	MPQ Garching, Germany	35
SLYPIG	K. Darée	ISL St. Louis, Germany	30
SNOP	K. Eidmann	MPQ Garching, Germany	20
SPECTR	I.B. Kosarev	Inst. for Dyn. of Geospheres, Moscow, Russia	1
STA	A. Bar-Shalom and J. Oreg	NRCN Beer Sheva, Israel	35
THERMOS	A.F. Nikiforov, V.G. Novikov, V.B. Uvarov and V.V. Dragalov	Keldysh Institute Moscow, Russia	35+23

[†] The notation 26+4 in the last column says that authors offered 4 alternate calculations of some contributions. For example, OPAL submitted four additional cases substituting UTAs for their detailed bound-bound opacity calculations.

* Basko submitted only formula calculations of mean opacities but no multifrequency tables.

Table 2: List of Cases for WorkOp-III:94 and index to plots

Element	Case #	Density (g/cm ³)	Temp (eV)	Motivation	Additional Info*	Case Name	Plot page numbers†
Hydrogen Z=1	1	10 ⁻⁶	1	Wiese NBS 1971 expt [1]		H1	10 / 18
	2	10 ⁻⁶	10	Stellar pulsation [2]		H2	20
	3	10 ⁺²	1250	Solar interior		H3	22
	4	10 ⁺⁵	10,000	Degeneracy issues		H4	24
Carbon Z=6	5	10 ⁻³	20	Low-Z element Density and Temperature Matrix		C1	11 / 26
	6	10 ⁻³	100			C2	28
	7	10 ⁻¹	20			C3	30
	8	10 ⁻¹	100			C4	32
	9	10	20			C5	34
	10	10	100			C6	36
Aluminum Z=13	11	1	500	Russian UGT measurements of		AL1	12 / 38
	12	1	1000	Rosseland mean [3]		AL2	40
Argon Z=18	13	5.7x10 ⁻³	1.8	LLNL Gas-gun experiments [4]	0-4 eV	AR1	42
Iron Z=26	14	10 ⁻⁵	20	Examine limits of UTA		FE1	13 / 44
	15	10 ⁻⁴	20	versus DTA in a region		FE2	46
	16	10 ⁻³	20	of $\Delta n=0$ transitions and		FE3	48
	17	10 ⁻²	20	term splitting also [5]		FE4	50
	18	7.86	200	CECAM 1988 case		FE5	14 / 52
	19	1	500	Russian UGT measurements of		FE6	12 / 54
	20	1	1000	Rosseland mean [3]		FE7	56
	21	1.27x10 ⁻²	59	LLNL experiment at NOVA [6]		FE8	14 / 58
Germanium Z=32	22	10 ⁻²	50	French experiment at CEL-V [7]	0-2000 eV	GE1	14 / 60
	23	5x10 ⁻²	76	AWE/LLNL HELEN expt [8]	0-2000 eV	GE2	62
	24	10 ⁻²	100		LTE	GE3	15 / 64
	25	10 ⁻²	300	LTE	LTE	GE4	66
	26	10 ⁻²	500	vs.	LTE	GE5	68
	27	10 ⁻²	100	NLTE	NLTE/CSS	GN3	70
	28	10 ⁻²	300	and XRL Mid-Z	NLTE/CSS	GN4	72
	29	10 ⁻²	500		NLTE/CSS	GN5	74
Gold Z=79	30	10 ⁻¹	20			AU1	16 / 76
	31	10 ⁻¹	100	Laser plasma		AU2	78
	32	10 ⁻¹	500	Density and		AU3	80
	33	10	20	Temperature		AU4	82
	34	10	100	Matrix		AU5	84
	35	10	500			AU6	86
Niobium - Aluminum Mixture	36	2.57x10 ⁻²	47	LLNL/AWE expt at NOVA [9] Fnumber(Nb)=0.65 Fnumber(Al)=0.35	0-3000 eV	MI1	14 / 88
King IVa	37	4.2 x10 ⁻⁹	3	Variable		MI2	90
mixture [10]	38	1.2 x10 ⁻⁶	20	Cepheids [11]		MI3	92

* Results were requested for photon energies from 0 to 20 kT unless otherwise noted.
CSS stands for complete, steady state; these are optically thin NLTE plasmas.

† The last column indicates the page numbers in this report where information is found for the case indicated:
The first number is the page containing the mean opacity plots.
The second number is the page of the summary of information plus mini plots.

Case Study References:

- [1] W.L. Wiese, D.E. Kelleher, and D.R. Paquette, Phys. Rev. A6, 1132 (1972)
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- [4] D. Erskine, B. Rozsnyai and M. Ross, JQSRT 51, 97 (1994)
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- [10] A.N. Cox and J.E. Tabor, Ap. J. Supp. 31, 271 (1976)
- [11] N. Simon, Ap. J. Lett. 260, L87 (1992)

Composition of the King IVa Astrophysical Mixture in parts per million [10]

Atomic Number	Mass Fraction (ppm)	Atomic Number	Mass Fraction (ppm)	Atomic Number	Mass Fraction (ppm)
1	700,000.	8	7,799.6	13	24.499
2	280,000.	10	5,543.9	14	489.64
6	2,615.5	11	25.101	18	729.04
7	859.61	12	334.02	26	1,579.1

Table 3. WorkOp-III:94 Attendees List

A. Bar Shalom	Physics Dept Nuclear Res. Cen. Negev	BeerSheva, Israel
M. Basko	Inst. Th. & Expt'l Physics	Moscow, Russia
J. Bauche	Laboratoire Aimé Cotton	Orsay, France
C. Bauche-Arnoult	Laboratoire Aimé Cotton	Orsay, France
T. Blenski	Dept. of Physics, École Polytechnique	Lausanne, Switzerland
B. Crowley	AWE Aldermaston STH HDM	Aldermaston, Reading U.K.
K. Darée	French-German Research Inst.	St. Louis, Germany
S. Davidson	AWE Aldermaston STH HDM	Aldermaston, Reading U.K.
L. Drska	Technical University of Prague	Prague, Czech Republic
K. Eidman	MPI für Quantenoptik	Garching, Germany
J. Foster	AWE Aldermaston N56	Aldermaston, Reading U.K.
A. Gautschy	MPI für Astrophysik	Garching, Germany
C. Iglesias	LLNL L-41	Livermore, CA USA
J. Keady	LANL Theoretical Div.	Los Alamos, NM USA
D. Kilcrease	LANL Theoretical Div.	Los Alamos, NM USA
M. Klapisch	Laser-Plasma Branch, NRL	Washington, D.C. USA
I. Kosarev	IDG Russian Academy of Sciences	Moscow, Russia
N. Magee	LANL Theoretical Div.	Los Alamos, NM USA
J. Meyer-ter-Vehn	MPI für Quantenoptik	Garching, Germany
E. Minguez	Inst. de Fusion Nuclear, U. Pol. Madrid	Madrid, Spain
A. Nikiforov	KIAM Russian Academy of Sciences	Moscow, Russia
T. Nishikawa	Faculty of Engineering, Okayama Univ.	Okayama, Japan
V. G. Novikov	KIAM Russian Academy of Sciences	Moscow, Russia
J. Oreg	Physics Dept Nuclear Res. Cen. Negev	BeerSheva, Israel
A. Rickert	MPI für Quantenoptik	Garching, Germany
S. Rose	Rutherford-Appleton Lab	Chilton, Didcot U.K.
D. Rowley	AWE Aldermaston STH HDM	Aldermaston, Reading U.K.
B. Rozsnyai	LLNL L-299	Livermore, CA USA
F. Serduke	LLNL L-178	Livermore, CA USA
M. Sinor	Technical University of Prague	Prague, Czech Republic
Y. Sun	Inst. App. Phys & Comp. Math.	Beijing, China
H. Takabe	ILE Osaka, Osaka University	Suita, Osaka Japan
P. Wang	Fusion Tech. Inst. Univ. Wisconsin	Madison, WI USA
B. Wilson	LLNL L-41	Livermore, CA USA

II: GRAPHICAL TABLES OF MEAN OPACITIES:

An overview of the workshop Rosseland and Planck means is given in the graphical-table plots of the mean opacities presented in section II. The cases are arranged in logical groups, *e.g.*, the 20-eV Fe cases with density increasing from 10^{-5} to 10^{-2} g/cm³, or the Ge LTE and NLTE cases.

Mean opacities are plotted vs. Code Name. In these plots, the cases are separated and identified along the abscissa by the case name, *e.g.*,

===== Fe2 =====

Opacities plotted are the Planck means (open circles), Rosseland means (filled triangles) and the continuous Rosseland means (small open triangles). The continuous Rosseland mean includes the bound-free, free-free and scattering contributions to the opacity (and excludes the bound-bound contribution). The importance of the bound-bound absorption to the Rosseland mean is thus represented by the difference between the Rosseland and continuous Rosseland means (large closed triangles and the small open triangles). A variance of less than 10% in all of the Rosseland means for a given case would suggest that all calculations are separated from one another by less than the height of one of the solid triangles.

We have plotted the contributor's own values of the Rosseland and Planck means. The continuous Rosseland mean was computed separately from the tabular values contributed to the workshop. It is noted, without further comment, that the Rosseland and Planck means computed from the submitted tables do not always agree with the means submitted by the author of the code.

Common Thread of the Mean Opacity Plot	Cases Plotted	Page
Laboratory and Astrophysical Hydrogen Plasmas	H1 - H4	10
Carbon Case Matrix: 20 & 100 eV 0.001, 0.1, 10 g/cm ³	C1 - C6	11
Experimental Measurements of Rosseland Means Russian UGT data with $\pm 15\%$ error bars [3]	Al1 Al2 Fe6 Fe7	12
Iron at 20 eV: $\rho=10^{-5}$ to 10^{-2} g/cm ³ Where does UTA look like DTA?	Fe1-Fe4	13
Fe, Ge, Al-Nb Laser Experiments Astrophysical Mixtures etc.	Fe8 Ge1 Ge2 Mi1-Mi3 Fe5	14
Ge at $\rho=0.01$ g/cm ³ T=100, 300, 500 eV LTE and NLTE (Complete Steady State)	Ge3 - Ge5 Gn3 - Gn5	15
Gold Laser-Plasma Cases	Au1-Au6	16

Laboratory & Astrophysical Hydrogen Plasmas

Carbon Case Matrix: 20 & 100 eV 0.001, 0.1 & 10 g/cm³

Opacity (cm^2/g)

Experimental Measurements of Rosseland Means

Russian UGT data with $\pm 15\%$ error bars (table 2 ref [3]) are shown as rectangles below

Opacity (cm^2/g)

Fe, Ge, and Al-Nb Laser Expts Astrophysical Mixtures etc.

Ge at $\rho=0.01 \text{ g/cm}^3$ $T=100, 300, 500 \text{ eV}$ LTE and NLTE (CSS)

III: CASE-STUDY-SYNOPSIS TABLES AND MINI PLOTS

A synopsis of results for each of the 38 cases listed in Table 2, found on page 6, are presented on two pages in this section. The first page includes tables of the mean opacities and partial mean opacities that were submitted by contributors. For comparison, we also show the Rosseland and Planck means computed by integrating the contributed absorption coefficient tables from the plasma frequency to 20 kT. In general, the agreement is quite satisfactory and generally is closer for the Rosseland mean than it is for the Planck mean.

The bottom of the first page shows two plots of the of the same ionization balance distribution computed for the plasma. Both have linear abscissae but the plot on the left shows a linear ion fraction whereas the plot on the right is logarithmic. These emphasize differences in the central portions and the tails of the distributions respectively.

The second page contains log-linear mini plots of the total absorption coefficient versus photon energy for all contributions. The Rosseland and Planck means computed by integrating the tabular absorption coefficients are plotted as horizontal solid and dashed lines respectively.

Summary Table Column Headings:

CODE	The name of the code
Kross	The Rosseland mean opacity as submitted
KrossW	Kross computed by integrating the tabular WorkOp κ_{total} contribution
Kplanck	The Planck mean opacity submitted
KplanckW	Kplanck computed by integrating the tabular WorkOp contribution
Z*	The submitted number of free electrons/ion
Z*W	Z* computed from the submitted distribution (0 if no distribution)
μ/kT	Chemical potential/kT (dimensionless)
FILE	The (8-character) name of the computer file that was actually plotted.
OmegaP	Plasma frequency computed from Z^* and the atomic number (eV)
KpIFF	The Planck free-free opacity
KpIBB	The Planck bound-bound opacity
KpIBF	The Planck bound-free opacity
KroFF	The Rosseland free-free opacity
KroCON	The Rosseland continuous opacity (FF+BF+SCAT)
LineCode	The graphics line code for each of the codes.

NOTE: All mean opacities in these tables are in units of cm^2/g

Ionization Distribution:

These are linear-linear and log-linear plots of the same information, the ion distribution $F(Z)$ vs. Z (the number of free electrons per ion) that was contributed with some of the submittals. The linear-linear plots of course indicate the shape of the ion stage distribution and the log-linear plots give more information about the tails of the distributions. $F(Z)$ was arbitrarily cut off at 10^{-6} . The short vertical lines are the Z^* (average ionization) values submitted by the contributor.

Mini Plots:

This page presents κ_{total} vs. photon energy for all of the contributions on the same log-linear scale. The abscissa in each of these plots is the photon energy in eV. The ordinates are in units of cm^2/gm . The Rosseland and Planck means that were computed by integrating the tabular contributions are depicted by the horizontal solid and dashed lines in these plots.

Z= 1 Rho=1.0E-06 g/cc kT= 1. eV: CASE STUDY HI

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z*W	mu/ kT	OmegaP
CORONA	9.694E+02	9.703E+02	1.965E+05	1.963E+05	1.200E-02	0.000E+00	1.363E+01	3.144E-03
EOSOPA	5.042E+02	5.024E+02	1.684E+05	2.111E+05	7.600E-02	7.559E-02	0.000E+00	7.944E-03
HOPE	5.123E+02	5.123E+02	1.718E+05	2.373E+05	2.100E-02	0.000E+00	1.365E+01	4.159E-03
LANL77	5.880E+02	5.879E+02	2.130E+05	1.679E+05	7.900E-02	7.850E-02	1.177E+01	8.067E-03
LEDCOP	4.260E+02	4.260E+02	8.628E+04	1.700E+05	7.800E-02	7.803E-02	1.177E+01	8.016E-03
OPAL	4.506E+02	4.506E+02	1.665E+05	1.123E+05	7.800E-02	7.801E-02	1.180E+01	8.016E-03
SAPHI R	4.128E+02	4.118E+02	9.302E+03	1.865E+04	7.600E-02	7.626E-02	1.179E+01	7.912E-03
SLYPI G	5.023E+02	5.025E+02	1.868E+05	1.867E+05	7.800E-02	7.800E-02	0.000E+00	8.048E-03
STA	1.333E+03	1.333E+03	1.694E+05	1.695E+05	7.700E-02	7.658E-02	1.179E+01	7.996E-03
THERMOS	1.629E+03	1.633E+03	1.782E+05	1.792E+05	1.500E-02	1.460E-02	1.363E+01	3.515E-03

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cor3.h1	1.934E+05	3.094E+03	2.653E-02	8.772E-04	4.011E+02	CORONA
eop3.h1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	EOSOPA
hop3.h1	1.681E+05	3.456E+03	2.478E+02	0.000E+00	3.062E+02	HOPE
l773.h1	2.106E+05	2.363E+03	1.148E+02	2.780E+00	2.941E+02	LANL77
l943.h1	1.361E+05	2.485E+03	1.198E+02	2.734E+00	2.965E+02	LEDCOP
opa3.h1	1.635E+05	2.802E+03	1.192E+02	3.038E+00	3.147E+02	OPAL
sap3.h1	7.313E+03	1.882E+03	9.951E+01	3.637E+00	1.801E+02	SAPHI R
sly3.h1	2.185E+01	5.212E+01	1.184E+00	3.195E+01	1.942E+00	SLYPI G
sta3.h1	1.659E+05	2.427E+03	1.142E+03	3.426E+01	2.701E+02	STA
the3.h1	1.766E+05	2.588E+03	4.040E-02	5.387E-04	4.368E+02	THERMOS

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Z= 1 Rho=1.0E-06 g/cc kT= 10. eV: CASE STUDY H2

CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z*W	mu/ kT	OmegaP
CASSANDR	2.711E+00	2.703E+00	2.771E+01	2.779E+01	9.990E-01	0.000E+00	-1.267E+01	2.880E-02
CORONA	3.573E+00	3.572E+00	2.630E+01	2.589E+01	9.990E-01	0.000E+00	-1.268E+01	2.869E-02
EOSOPA	2.694E+00	2.694E+00	2.339E+01	2.481E+01	1.000E+00	9.997E-01	0.000E+00	2.882E-02
HOPE	2.399E+00	2.399E+00	1.788E+01	1.781E+01	9.980E-01	0.000E+00	-1.271E+01	2.867E-02
LANL77	2.643E+00	2.643E+00	4.201E+01	3.712E+01	9.970E-01	9.971E-01	-1.268E+01	2.866E-02
LED COP	2.631E+00	2.631E+00	2.492E+01	3.009E+01	9.940E-01	9.936E-01	-1.268E+01	2.862E-02
OPAL	2.659E+00	2.659E+00	2.506E+01	3.463E+01	9.970E-01	9.975E-01	-1.268E+01	2.866E-02
SAPHI R	2.773E+00	2.773E+00	2.136E+01	2.173E+01	9.990E-01	9.994E-01	-1.268E+01	2.869E-02
SLYPI G	1.597E+00	1.597E+00	1.030E+01	1.030E+01	1.000E+00	1.000E+00	0.000E+00	2.882E-02
STA	2.620E+00	2.620E+00	2.349E+01	2.306E+01	1.000E+00	9.998E-01	-1.267E+01	2.882E-02
THERMOS	2.612E+00	2.604E+00	2.159E+01	2.085E+01	9.990E-01	9.999E-01	-1.270E+01	2.869E-02

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE	
cas3. h2	6.001E+00	1.577E+01	5.942E+00	1.488E-01	2.709E+00	CASSANDR	-----
cor3. h2	7.663E+00	1.363E+01	4.617E+00	1.527E-01	2.635E+00	CORONA	-----
eop3. h2	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	EOSOPA	-----
hop3. h2	2.047E+00	1.136E+01	4.475E+00	8.983E-02	2.414E+00	HOPE	-----
l773. h2	2.373E+01	1.247E+01	5.817E+00	1.457E-01	2.641E+00	LANL77	-----
l943. h2	1.416E+01	1.251E+01	6.227E+00	1.440E-01	2.629E+00	LED COP	-----
opa3. h2	5.634E+00	1.313E+01	6.295E+00	1.439E-01	2.658E+00	OPAL	-----
sap3. h2	1.230E+00	1.422E+01	5.875E+00	1.962E-01	2.772E+00	SAPHI R	-----
sl y3. h2	1.362E+00	4.805E+00	1.413E+01	1.416E+00	1.160E+01	SLYPI G	-----
sta3. h2	5.460E+00	1.235E+01	5.292E+00	1.320E-01	2.619E+00	STA	-----
the3. h2	4.563E+00	1.141E+01	4.947E+00	1.499E-01	2.602E+00	THERMOS	-----

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Z= 1 Rho=1.0E+02 g/cc kT= 1250. eV: CASE STUDY H3

CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z*W	mu/ kT	OmegaP
CASSANDR	1.031E+00	1.026E+00	1.327E+01	1.608E+01	1.000E+00	0.000E+00	-1.409E+00	2.882E+02
CORONA	1.524E+00	1.523E+00	2.161E+01	1.686E+01	1.000E+00	0.000E+00	-1.418E+00	2.870E+02
EOSOPA	1.380E+00	1.380E+00	1.690E+01	1.395E+01	1.000E+00	1.000E+00	0.000E+00	2.882E+02
HOPE	8.525E-01	8.526E-01	4.641E+00	4.535E+00	9.940E-01	0.000E+00	-1.464E+00	2.862E+02
LANL77	9.954E-01	9.954E-01	1.189E+01	1.186E+01	1.000E+00	0.000E+00	-1.417E+00	2.870E+02
LEDCOP	8.678E-01	8.678E-01	1.086E+01	1.083E+01	1.000E+00	1.000E+00	-1.523E+00	2.870E+02
OPAL	8.915E-01	8.914E-01	1.183E+01	1.873E+01	1.000E+00	1.000E+00	-1.439E+00	2.870E+02
SAPHI R	1.602E+00	1.602E+00	2.314E+01	1.839E+01	1.000E+00	1.000E+00	-1.471E+00	2.870E+02
SLYPI G	9.854E-01	9.840E-01	3.026E+01	2.093E+01	1.000E+00	1.000E+00	0.000E+00	2.882E+02
STA	9.354E-01	9.355E-01	8.811E+00	7.231E+00	9.790E-01	1.000E+00	-1.433E+00	2.851E+02
THERMOS	1.056E+00	1.053E+00	2.114E+01	1.524E+01	1.000E+00	0.000E+00	-1.501E+00	2.870E+02

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.h3	0.000E+00	0.000E+00	1.327E+01	2.786E-01	1.031E+00	CASSANDR
cor3.h3	0.000E+00	0.000E+00	2.122E+01	7.017E-01	1.524E+00	CORONA
eop3.h3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	EOSOPA
hop3.h3	0.000E+00	5.515E-02	4.586E+00	1.844E-01	8.597E-01	HOPE
l773.h3	2.373E+01	0.000E+00	1.189E+01	2.680E-01	9.954E-01	LANL77
l943.h3	0.000E+00	0.000E+00	1.086E+01	2.435E-01	8.678E-01	LEDCOP
opa3.h3	0.000E+00	0.000E+00	1.183E+01	2.721E-01	8.915E-01	OPAL
sap3.h3	0.000E+00	0.000E+00	2.314E+01	7.652E-01	1.602E+00	SAPHI R
sly3.h3	0.000E+00	0.000E+00	3.026E+01	1.813E-01	9.854E-01	SLYPI G
sta3.h3	0.000E+00	0.000E+00	8.546E+00	3.043E-01	9.354E-01	STA
the3.h3	0.000E+00	0.000E+00	1.988E+01	2.844E-01	1.053E+00	THERMOS

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Z= 1 Rho=1.0E+05 g/cc kT= 10000. eV: CASE STUDY H4

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
CASSANDR	5.992E-01	5.741E-01	1.990E+00	1.692E+00	1.000E+00	0.000E+00	5.447E+00	9.112E+03
CORONA	1.248E+00	1.247E+00	1.506E+01	5.904E+00	1.000E+00	0.000E+00	5.416E+00	9.076E+03
EOSOPA	9.260E-01	1.144E+00	4.698E+00	4.479E+00	1.000E+00	1.000E+00	0.000E+00	9.112E+03
HOPE	4.634E-01	4.676E-01	3.408E-01	3.244E-01	9.960E-01	0.000E+00	5.299E+00	9.058E+03
LANL77	5.564E-01	5.564E-01	9.562E-01	9.543E-01	1.000E+00	0.000E+00	5.416E+00	9.076E+03
LEDCOP	5.414E-01	5.414E-01	9.345E-01	9.326E-01	1.000E+00	1.000E+00	5.405E+00	9.076E+03
OPAL	3.435E-01	3.435E-01	9.025E-01	6.291E+00	1.000E+00	1.000E+00	5.409E+00	9.076E+03
SAPHI R	4.257E-01	4.257E-01	1.413E+02	3.387E-01	1.000E+00	1.000E+00	5.336E+00	9.076E+03
SLYPI G	8.021E-01	8.013E-01	4.156E+00	1.731E+00	1.000E+00	1.000E+00	0.000E+00	9.112E+03
STA	1.999E-01	2.000E-01	5.224E-01	2.367E-01	9.930E-01	1.000E+00	5.416E+00	9.081E+03
THERMOS	6.164E-01	6.151E-01	3.840E+00	1.524E+00	1.000E+00	0.000E+00	5.295E+00	9.076E+03

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE	
cas3.h4	0.000E+00	0.000E+00	1.990E+00	8.954E-02	5.992E-01	CASSANDR	-----
cor3.h4	0.000E+00	0.000E+00	1.466E+01	4.848E-01	1.248E+00	CORONA	-----
eop3.h4	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	EOSOPA	-----
hop3.h4	0.000E+00	4.158E-06	3.408E-01	6.324E-02	4.683E-01	HOPE	-----
l773.h4	2.373E+01	0.000E+00	9.562E-01	1.118E-01	5.564E-01	LANL77	-----
l943.h4	0.000E+00	0.000E+00	9.345E-01	1.307E-01	5.414E-01	LEDCOP	-----
opa3.h4	0.000E+00	0.000E+00	9.025E-01	1.243E-01	3.435E-01	OPAL	-----
sap3.h4	0.000E+00	0.000E+00	1.413E+02	4.062E-06	4.257E-01	SAPHI R	-----
sly3.h4	0.000E+00	0.000E+00	4.156E+00	1.443E-01	8.021E-01	SLYPI G	-----
sta3.h4	0.000E+00	0.000E+00	4.260E-01	5.298E-02	1.999E-01	STA	-----
the3.h4	0.000E+00	0.000E+00	3.399E+00	1.396E-01	6.149E-01	THERMOS	-----

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Z= 6 Rho=1.0E-03 g/cc kT= 20. eV: CASE STUDY C1

CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z*W	mu/ kT	OmegaP
CASSANDR	5.905E+02	5.901E+02	3.252E+03	3.263E+03	3.818E+00	0.000E+00-7.933E+00	5.140E-01	
CORONA	3.241E+02	3.242E+02	2.156E+03	2.148E+03	3.830E+00	0.000E+00-7.942E+00	5.146E-01	
EOSOPA	2.847E+02	2.847E+02	1.822E+03	1.925E+03	3.906E+00	3.906E+00 0.000E+00	5.197E-01	
HOPE	6.083E+02	6.083E+02	4.463E+03	4.462E+03	3.727E+00	3.922E+00-8.056E+00	5.076E-01	
IAPC105	4.811E+02	4.802E+02	5.567E+03	4.746E+03	3.850E+00	0.000E+00-7.936E+00	5.159E-01	
LANL77	2.607E+02	2.607E+02	2.044E+03	2.041E+03	3.897E+00	3.897E+00-7.924E+00	5.191E-01	
LED COP	3.539E+02	3.539E+02	2.105E+03	2.120E+03	3.863E+00	3.863E+00-7.933E+00	5.168E-01	
MONTECAR	6.429E+02	6.430E+02	2.105E+03	2.122E+03	3.893E+00	3.893E+00-7.924E+00	5.191E-01	
OPAL	3.685E+02	3.685E+02	2.230E+03	2.185E+03	3.865E+00	3.865E+00-7.949E+00	5.169E-01	
SAPHIR	2.938E+02	2.938E+02	2.215E+03	2.260E+03	3.817E+00	3.817E+00-7.947E+00	5.137E-01	
SLYPI G	3.736E+02	3.736E+02	2.043E+03	2.038E+03	3.945E+00	3.945E+00 0.000E+00	5.223E-01	
SNOP	7.559E+02	7.560E+02	2.892E+03	2.891E+03	3.932E+00	3.932E+00 0.000E+00	5.214E-01	
SPECTRA	5.736E+02	5.576E+02	3.101E+03	3.186E+03	3.853E+00	3.853E+00-7.897E+00	5.161E-01	
STA	2.984E+02	2.984E+02	1.852E+03	1.847E+03	3.878E+00	3.878E+00-7.984E+00	5.178E-01	
THERMOS	4.081E+02	4.073E+02	1.595E+03	1.587E+03	3.856E+00	3.926E+00-7.996E+00	5.166E-01	

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.c1	1.952E+03	1.111E+03	1.890E+02	6.908E+00	5.255E+02	CASSANDR
cor3.c1	1.291E+03	6.903E+02	1.740E+02	5.756E+00	2.128E+02	CORONA
eop3.c1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	EOSOPA
hop3.c1	3.378E+03	8.491E+02	2.362E+02	7.960E+00	5.092E+02	HOPE
iap3.c1	4.709E+03	6.040E+02	2.097E+02	5.440E+00	2.911E+02	IAPC105
l773.c1	1.266E+03	5.928E+02	1.858E+02	5.745E+00	2.417E+02	LANL77
l943.c1	1.219E+03	7.162E+02	1.813E+02	5.606E+00	3.242E+02	LED COP
mca3.c1	1.144E+03	7.624E+02	1.986E+02	5.830E+00	3.231E+02	MONTECAR
opa3.c1	1.200E+03	7.935E+02	2.374E+02	8.381E+00	3.408E+02	OPAL
sap3.c1	1.083E+03	9.425E+02	1.893E+02	6.260E+00	2.838E+02	SAPHIR
sly3.c1	1.261E+03	6.122E+02	1.689E+02	5.342E+00	2.568E+02	SLYPI G
sno3.c1	2.016E+03	7.304E+02	1.460E+02	7.913E+00	4.003E+02	SNOP
spe3.c1	1.992E+03	9.230E+02	1.865E+02	5.648E+00	5.051E+02	SPECTRA
sta3.c1	1.174E+03	4.351E+02	2.427E+02	8.638E+00	2.729E+02	STA
the3.c1	6.809E+02	8.012E+02	1.050E+02	5.352E+00	3.709E+02	THERMOS

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WorkOp-III: 94 Final

Z= 6 Rho=1.0E-03 g/cc kT= 100. eV: CASE STUDY C2

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z*W	mu/ kT	OmegaP
CASSANDR	5.867E+00	5.852E+00	9.726E+01	9.732E+01	5.956E+00	0.000E+00-9.911E+00	6.420E-01	
CORONA	1.005E+01	1.019E+01	9.631E+01	9.620E+01	5.958E+00	0.000E+00-9.914E+00	6.418E-01	
EOSOPA	4.971E+00	4.968E+00	9.031E+01	1.242E+02	5.979E+00	5.979E+00 0.000E+00	6.429E-01	
HOPE	6.569E+00	6.570E+00	9.124E+01	7.724E+01	5.966E+00	0.000E+00-9.935E+00	6.422E-01	
IAPC105	4.673E+00	4.468E+00	3.042E+01	2.409E+01	5.965E+00	0.000E+00-9.913E+00	6.422E-01	
LANL77	6.375E+00	6.375E+00	2.955E+01	2.939E+01	5.961E+00	5.961E+00-9.913E+00	6.420E-01	
LED COP	5.820E+00	5.821E+00	6.899E+01	8.910E+01	5.937E+00	5.937E+00-9.917E+00	6.407E-01	
MONTECAR	1.074E+01	1.076E+01	8.730E+01	1.006E+02	5.971E+00	5.971E+00-9.912E+00	6.425E-01	
OPAL	6.115E+00	6.115E+00	9.577E+01	6.198E+01	5.955E+00	5.955E+00-9.914E+00	6.417E-01	
SAPHI R	6.528E+00	6.518E+00	5.435E+01	5.658E+01	5.978E+00	5.978E+00-9.912E+00	6.429E-01	
SLYPI G	5.157E+00	5.157E+00	7.740E+01	7.744E+01	5.989E+00	5.989E+00 0.000E+00	6.435E-01	
SNOP	1.991E+00	1.990E+00	1.090E+02	1.090E+02	5.986E+00	4.999E+00 0.000E+00	6.433E-01	
STA	7.504E+00	7.504E+00	9.050E+01	9.028E+01	5.977E+00	5.977E+00-9.928E+00	6.428E-01	
THERMOS	4.586E+00	4.826E+00	8.951E+01	8.936E+01	5.972E+00	5.985E+00-9.928E+00	6.428E-01	

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.c2	7.404E+01	2.058E+01	2.639E+00	7.551E-02	3.690E+00	CASSANDR
cor3.c2	7.057E+01	2.333E+01	2.206E+00	7.296E-02	4.413E+00	CORONA
eop3.c2	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	EOSOPA
hop3.c2	7.013E+01	1.896E+01	2.147E+00	4.581E-02	3.830E+00	HOPE
iap3.c2	8.163E+00	1.917E+01	2.937E+00	6.384E-02	3.141E+00	IAPC105
l773.c2	6.658E+00	2.031E+01	2.588E+00	7.378E-02	4.848E+00	LANL77
l943.c2	7.033E+01	1.980E+01	2.567E+00	7.297E-02	4.017E+00	LED COP
mca3.c2	6.365E+01	2.075E+01	2.709E+00	7.091E-02	3.608E+00	MONTECAR
opa3.c2	7.140E+01	2.146E+01	2.919E+00	7.406E-02	4.689E+00	OPAL
sap3.c2	3.751E+01	1.413E+01	2.687E+00	8.888E-02	5.727E+00	SAPHI R
sly3.c2	5.990E+01	1.534E+01	2.160E+00	6.668E-02	1.722E+00	SLYPI G
sno3.c2	8.779E+01	1.885E+01	2.371E+00	8.626E-02	1.111E+00	SNOP
sta3.c2	6.840E+01	1.958E+01	2.328E+00	6.990E-02	3.925E+00	STA
the3.c2	6.564E+01	2.147E+01	2.270E+00	7.685E-02	4.012E+00	THERMOS

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Z= 6 Rho=1.0E-01 g/cc kT= 20. eV: CASE STUDY C3

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
CASSANDR	8.756E+03	8.725E+03	4.462E+04	4.603E+04	3.111E+00	0.000E+00-3.601E+00	4.640E+00	
CORONA	6.185E+03	6.185E+03	3.774E+04	3.547E+04	2.984E+00	0.000E+00-3.576E+00	4.542E+00	
EOSOPA	4.585E+03	4.586E+03	2.179E+04	1.701E+04	2.939E+00	2.939E+00 0.000E+00	4.508E+00	
HOPE	7.478E+03	7.479E+03	3.697E+04	3.688E+04	2.595E+00	2.219E+00-3.974E+00	4.236E+00	
I APC105	6.050E+03	6.045E+03	2.687E+04	2.448E+04	2.815E+00	0.000E+00-3.635E+00	4.411E+00	
LANL77	4.413E+03	4.414E+03	2.371E+04	2.368E+04	3.255E+00	3.255E+00-3.609E+00	4.744E+00	
LEDCOP	6.072E+03	6.072E+03	3.182E+04	3.184E+04	3.065E+00	3.065E+00-3.666E+00	4.603E+00	
MONTECAR	7.088E+03	7.089E+03	2.841E+04	2.571E+04	3.106E+00	3.106E+00-3.507E+00	4.699E+00	
OPAL	6.719E+03	6.719E+03	3.879E+04	4.346E+04	3.132E+00	3.132E+00-3.758E+00	4.653E+00	
SAPHI R	4.233E+03	4.233E+03	2.692E+04	2.497E+04	3.015E+00	3.015E+00-3.580E+00	4.566E+00	
SLYPI G	3.967E+03	3.968E+03	2.457E+04	2.147E+04	3.510E+00	3.510E+00 0.000E+00	4.926E+00	
SNOP	1.432E+04	1.433E+04	5.302E+04	5.300E+04	2.849E+00	2.849E+00 0.000E+00	4.438E+00	
STA	5.658E+03	5.658E+03	3.231E+04	3.127E+04	2.856E+00	2.856E+00-3.850E+00	4.444E+00	
THERMOS	6.592E+03	6.571E+03	3.011E+04	2.962E+04	3.081E+00	3.086E+00-3.750E+00	4.617E+00	

FILE	Kpl BB	Kpl BF	Kpl FF	Kr off	KroCon	CODE	
cas3.c3	1.622E+03	3.520E+04	7.797E+03	5.560E+02	8.448E+03	CASSANDR	-----
cor3.c3	8.775E+02	2.669E+04	1.017E+04	3.365E+02	3.554E+03	CORONA	-----
eop3.c3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	EOSOPA	-----
hop3.c3	1.361E+04	2.012E+04	3.238E+03	1.679E+02	6.179E+03	HOPE	-----
iap3.c3	5.694E+03	1.005E+04	8.344E+03	2.062E+02	2.471E+03	I APC105	-----
l773.c3	1.100E+03	1.710E+04	5.504E+03	2.924E+02	4.241E+03	LANL77	-----
l943.c3	4.768E+03	2.229E+04	4.764E+03	2.486E+02	5.687E+03	LEDCOP	-----
mca3.c3	7.888E+02	1.655E+04	1.107E+04	3.129E+02	5.891E+03	MONTECAR	-----
opa3.c3	8.482E+03	1.878E+04	1.152E+04	6.451E+02	6.341E+03	OPAL	-----
sap3.c3	7.453E+03	9.706E+03	9.790E+03	3.241E+02	4.091E+03	SAPHI R	-----
sly3.c3	9.864E+01	1.236E+04	1.210E+04	3.836E+02	3.482E+03	SLYPI G	-----
sno3.c3	2.466E+04	2.166E+04	6.704E+03	3.640E+02	1.301E+04	SNOP	-----
sta3.c3	1.052E+04	1.371E+04	8.075E+03	4.846E+02	5.504E+03	STA	-----
the3.c3	1.208E+03	2.532E+04	3.415E+03	2.323E+02	6.460E+03	THERMOS	-----

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Z= 6 Rho=1.0E-01 g/cc kT= 100. eV: CASE STUDY C4

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z*W	mu/ kT	OmegaP
CASSANDR	1.198E+03	1.197E+03	4.309E+03	4.323E+03	5.315E+00	0.000E+00-5.450E+00	6.065E+00	6.065E+00
CORONA	1.120E+03	1.122E+03	3.906E+03	3.875E+03	5.250E+00	0.000E+00-5.434E+00	6.025E+00	6.025E+00
EOSOPA	5.245E+02	5.244E+02	3.715E+03	4.055E+03	5.298E+00	5.297E+00 0.000E+00	6.052E+00	6.052E+00
HOPE	7.709E+02	7.710E+02	4.806E+03	4.765E+03	5.144E+00	0.000E+00-5.541E+00	5.963E+00	5.963E+00
I APC105	6.680E+02	5.354E+02	3.743E+03	3.003E+03	5.250E+00	0.000E+00 5.434E+00	6.025E+00	6.025E+00
LANL77	7.714E+02	7.715E+02	3.607E+03	3.745E+03	5.381E+00	5.381E+00-5.410E+00	6.099E+00	6.099E+00
LEDCOP	7.367E+02	7.367E+02	3.662E+03	4.014E+03	5.330E+00	5.330E+00-5.420E+00	6.070E+00	6.070E+00
MONTECAR	1.256E+03	1.257E+03	5.758E+03	5.733E+03	5.375E+00	5.375E+00-5.405E+00	6.111E+00	6.111E+00
OPAL	7.634E+02	7.633E+02	3.885E+03	3.881E+03	5.342E+00	5.342E+00-5.438E+00	6.077E+00	6.077E+00
SAPHI R	5.305E+02	5.298E+02	2.866E+03	2.916E+03	5.300E+00	5.300E+00-5.429E+00	6.053E+00	6.053E+00
SLYPI G	7.572E+02	7.572E+02	3.413E+03	3.398E+03	5.510E+00	5.510E+00 0.000E+00	6.172E+00	6.172E+00
SNOP	5.313E+02	5.305E+02	4.661E+03	4.673E+03	5.435E+00	4.901E+00 0.000E+00	6.130E+00	6.130E+00
STA	6.664E+02	6.663E+02	3.588E+03	3.580E+03	5.364E+00	5.365E+00-5.498E+00	6.090E+00	6.090E+00
THERMOS	5.977E+02	6.122E+02	3.248E+03	3.248E+03	5.365E+00	5.365E+00-5.477E+00	6.093E+00	6.093E+00

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.c4	2.764E+03	1.375E+03	1.705E+02	6.199E+00	4.887E+02	CASSANDR
cor3.c4	2.304E+03	1.434E+03	1.679E+02	5.554E+00	4.130E+02	CORONA
eop3.c4	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	EOSOPA
hop3.c4	3.662E+03	1.034E+03	1.104E+02	1.794E+00	3.159E+02	HOPE
iap3.c4	2.551E+03	9.755E+02	2.004E+02	4.234E+00	1.059E+02	I APC105
l773.c4	2.223E+03	1.214E+03	1.702E+02	5.379E+00	4.546E+02	LANL77
l943.c4	2.769E+03	1.153E+03	1.668E+02	5.236E+00	4.259E+02	LEDCOP
mca3.c4	2.298E+03	3.257E+03	2.031E+02	5.235E+00	6.431E+02	MONTECAR
opa3.c4	2.561E+03	1.133E+03	1.905E+02	6.035E+00	4.786E+02	OPAL
sap3.c4	2.096E+03	5.756E+02	1.932E+02	6.394E+00	4.024E+02	SAPHI R
sly3.c4	2.239E+03	1.003E+03	1.707E+02	5.243E+00	1.943E+02	SLYPI G
sno3.c4	3.323E+03	1.154E+03	1.841E+02	6.701E+00	2.166E+02	SNOP
sta3.c4	2.451E+03	9.558E+02	1.808E+02	6.032E+00	4.239E+02	STA
the3.c4	1.743E+03	1.372E+03	1.336E+02	5.396E+00	3.559E+02	THERMOS

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Z= 6 Rho=1.0E+01 g/cc kT= 20. eV: CASE STUDY C5

.CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z*W	mu/ kT	OmegaP
CASSANDR	1.401E+04	1.193E+04	3.120E+04	1.529E+04	4.000E+00	0.000E+00	1.749E+00	5.261E+01
CORONA	5.548E+04	5.773E+04	1.627E+06	4.324E+04	3.525E+00	0.000E+00	2.295E+00	4.937E+01
EOSOPA	7.081E+04	7.101E+04	1.760E+05	1.462E+05	4.150E+00	4.150E+00	0.000E+00	5.356E+01
HOPE	3.114E+04	3.249E+04	6.330E+04	5.604E+04	1.371E+00	0.000E+00	-3.304E-01	3.079E+01
MONTECAR	6.795E+04	6.857E+04	2.134E+06	1.384E+05	4.000E+00	4.000E+00	2.564E+00	5.259E+01
OPAL	6.686E+04	6.686E+04	8.312E+04	9.279E+05	3.980E+00	3.980E+00	1.527E+00	5.246E+01
SAPHI R	2.493E+04	2.511E+04	4.317E+06	2.539E+04	3.032E+00	3.032E+00	1.880E+00	4.578E+01
SLYPI G	4.041E+04	4.079E+04	6.415E+05	7.621E+04	4.000E+00	4.000E+00	0.000E+00	5.259E+01
SNOP	5.917E+04	5.951E+04	8.367E+05	1.456E+05	3.126E+00	3.126E+00	0.000E+00	4.649E+01
STA	5.440E+04	5.559E+04	3.809E+05	7.303E+04	4.000E+00	4.000E+00	2.089E+00	5.259E+01
THERMOS	1.159E+04	1.179E+04	8.579E+04	1.491E+04	4.000E+00	0.000E+00	1.667E+00	5.261E+01

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.c5	0.000E+00	3.867E+01	3.116E+04	1.356E+04	1.401E+04	CASSANDR
cor3.c5	7.399E-13	1.036E+01	1.627E+06	5.382E+04	5.548E+04	CORONA
eop3.c5	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	EOSOPA
hop3.c5	6.622E+02	2.269E+04	3.995E+04	7.367E+03	2.773E+04	HOPE
mca3.c5	0.000E+00	6.329E+01	2.134E+06	6.293E+04	6.795E+04	MONTECAR
opa3.c5	0.000E+00	2.899E+02	8.284E+04	6.568E+04	6.686E+04	OPAL
sap3.c5	6.942E+02	5.884E+03	4.310E+06	4.486E+03	2.416E+04	SAPHI R
sl y3.c5	1.819E-03	7.573E+00	6.413E+05	3.882E+04	4.041E+04	SLYPI G
sno3.c5	2.321E-11	2.902E+04	8.076E+05	4.417E+04	5.917E+04	SNOP
sta3.c5	0.000E+00	1.098E+01	3.809E+05	5.309E+04	5.440E+04	STA
the3.c5	0.000E+00	4.406E+01	8.398E+04	1.050E+04	1.155E+04	THERMOS

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Z= 6 Rho=1.0E+01 g/cc kT= 100. eV: CASE STUDY C6

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z*W	mu/ kT	OmegaP
CASSANDR	6.980E+03	6.806E+03	1.354E+04	1.425E+04	4.322E+00	0.000E+00	-8.968E-01	5.469E+01
CORONA	7.243E+03	7.300E+03	2.295E+04	2.000E+04	3.943E+00	0.000E+00	-1.001E+00	5.221E+01
EOSOPA	5.853E+03	5.852E+03	1.339E+04	1.316E+04	4.256E+00	4.256E+00	0.000E+00	5.424E+01
HOPE	7.510E+03	7.522E+03	1.673E+04	1.659E+04	3.640E+00	0.000E+00	-1.388E+00	5.016E+01
IAPC105	3.109E+03	2.600E+03	2.796E+04	7.365E+03	3.735E+00	0.000E+00	-1.064E+00	5.081E+01
LANL77	7.143E+03	7.148E+03	1.730E+04	1.731E+04	4.195E+00	0.000E+00	-9.322E-01	5.385E+01
LEDCOP	6.441E+03	6.441E+03	1.495E+04	1.496E+04	4.295E+00	4.295E+00	-9.284E-01	5.449E+01
MONTECAR	6.758E+03	6.758E+03	2.175E+04	1.647E+04	4.352E+00	4.352E+00	-8.915E-01	5.483E+01
OPAL	7.459E+03	7.459E+03	1.765E+04	2.388E+04	4.184E+00	4.184E+00	-1.182E+00	5.378E+01
SAPHIR	5.984E+03	5.983E+03	1.972E+04	1.606E+04	4.081E+00	4.081E+00	-1.029E+00	5.312E+01
SLYPI G	6.538E+03	6.537E+03	1.675E+04	1.288E+04	4.541E+00	4.541E+00	0.000E+00	5.603E+01
SNOP	7.882E+03	7.882E+03	2.312E+04	2.019E+04	4.063E+00	4.063E+00	0.000E+00	5.300E+01
STA	6.644E+03	6.644E+03	1.656E+04	1.468E+04	4.303E+00	4.303E+00	-1.042E+00	5.454E+01
THERMOS	6.201E+03	6.178E+03	1.535E+04	1.362E+04	4.383E+00	0.000E+00	-1.108E+00	5.507E+01

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.c6	0.000E+00	1.069E+04	2.847E+03	3.260E+02	6.980E+03	CASSANDR
cor3.c6	0.000E+00	1.525E+04	7.703E+03	2.547E+02	7.243E+03	CORONA
eop3.c6	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	EOSOPA
hop3.c6	3.962E+03	1.031E+04	2.459E+03	1.467E+02	6.201E+03	HOPE
iap3.c6	0.000E+00	5.787E+03	7.248E+03	1.434E+02	3.097E+03	IAPC105
l773.c6	1.068E+02	1.414E+04	3.053E+03	2.246E+02	7.092E+03	LANL77
l943.c6	1.131E+03	1.062E+04	3.198E+03	2.393E+02	6.339E+03	LEDCOP
mca3.c6	0.000E+00	1.084E+04	1.091E+04	2.711E+02	6.758E+03	MONTECAR
opa3.c6	4.930E+03	7.626E+03	5.091E+03	3.938E+02	6.311E+03	OPAL
sap3.c6	1.175E+03	9.652E+03	8.887E+03	2.942E+02	5.924E+03	SAPHIR
sly3.c6	0.000E+00	8.292E+03	8.463E+03	2.808E+02	6.538E+03	SLYPI G
sno3.c6	2.679E-13	1.471E+04	8.402E+03	3.080E+02	7.882E+03	SNOP
sta3.c6	0.000E+00	9.962E+03	6.595E+03	4.131E+02	6.644E+03	STA
the3.c6	0.000E+00	9.725E+03	5.310E+03	2.696E+02	6.188E+03	THERMOS

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Z=13 Rho=1.0E+00 g/cc kT= 500. eV: CASE STUDY Al 1

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
CASSANDR	6.307E+01	6.306E+01	3.410E+02	3.418E+02	1.225E+01	0.000E+00	-5.541E+00	1.941E+01
CORONA	6.483E+01	6.490E+01	3.345E+02	3.346E+02	1.214E+01	0.000E+00	-5.517E+00	1.933E+01
EOSOPA	3.369E+01	3.368E+01	3.056E+02	3.237E+02	1.234E+01	1.234E+01	0.000E+00	1.949E+01
HOPE	5.313E+01	5.313E+01	3.414E+02	3.412E+02	1.223E+01	0.000E+00	-5.563E+00	1.940E+01
I APC105	5.938E+01	5.305E+01	2.348E+02	2.045E+02	1.222E+01	0.000E+00	-5.511E+00	1.939E+01
JI MENA	7.967E+01	7.971E+01	3.862E+02	3.770E+02	1.227E+01	0.000E+00	-5.475E+00	1.943E+01
LANL77	5.232E+01	5.221E+01	2.544E+02	2.600E+02	1.241E+01	0.000E+00	-5.494E+00	1.954E+01
LEDCOP	4.779E+01	4.779E+01	2.888E+02	3.359E+02	1.233E+01	1.233E+01	-5.502E+00	1.948E+01
MONTECAR	8.692E+01	8.692E+01	3.392E+02	3.281E+02	1.229E+01	1.229E+01	-5.502E+00	1.947E+01
OPAL	5.927E+01	5.927E+01	3.342E+02	3.602E+02	1.231E+01	1.231E+01	-5.505E+00	1.946E+01
RACHEL	7.054E+01	7.050E+01	3.256E+02	3.013E+02	1.226E+01	0.000E+00	-5.546E+00	1.942E+01
SAPHI R	4.023E+01	4.021E+01	2.639E+02	2.698E+02	1.226E+01	1.226E+01	-5.511E+00	1.942E+01
SLYPI G	5.132E+01	5.131E+01	2.732E+02	2.735E+02	1.258E+01	1.258E+01	0.000E+00	1.968E+01
STA	5.253E+01	5.253E+01	3.181E+02	3.174E+02	1.228E+01	1.228E+01	-5.550E+00	1.944E+01
THERMOS	4.612E+01	4.723E+01	3.482E+02	3.479E+02	1.228E+01	1.241E+01	-5.545E+00	1.944E+01

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.al1	2.258E+02	1.005E+02	1.467E+01	4.925E-01	3.082E+01	CASSANDR
cor3.al1	2.072E+02	1.130E+02	1.409E+01	4.658E-01	2.797E+01	CORONA
eop3.al1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	EOSOPA
hop3.al1	2.430E+02	8.481E+01	1.365E+01	3.204E-01	2.334E+01	HOPE
iap3.al1	1.336E+02	8.221E+01	1.795E+01	3.369E-01	1.316E+01	I APC105
jim3.al1	2.681E+02	9.810E+01	2.007E+01	5.150E-01	2.149E+01	JI MENA
l773.al1	1.393E+02	9.972E+01	1.549E+01	4.649E-01	2.206E+01	LANL77
l943.al1	2.164E+02	9.334E+01	1.508E+01	4.564E-01	2.734E+01	LEDCOP
mca3.al1	2.290E+02	9.300E+01	1.698E+01	4.371E-01	2.240E+01	MONTECAR
opa3.al1	2.244E+02	9.284E+01	1.694E+01	4.887E-01	2.912E+01	OPAL
rac3.al1	2.050E+02	1.058E+02	1.463E+01	4.846E-01	2.457E+01	RACHEL
sap3.al1	1.986E+02	4.863E+01	1.664E+01	5.503E-01	3.348E+01	SAPHI R
sly3.al1	1.804E+02	7.844E+01	1.427E+01	4.389E-01	1.415E+01	SLYPI G
sta3.al1	2.154E+02	8.784E+01	1.465E+01	4.809E-01	3.015E+01	STA
the3.al1	2.098E+02	1.246E+02	1.355E+01	4.694E-01	2.970E+01	THERMOS

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Z=13 Rho=1.0E+00 g/cc kT= 1000. eV: CASE STUDY A12

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
CASSANDR	2.267E+00	2.267E+00	1.282E+01	1.287E+01	1.287E+01	0.000E+00	-6.514E+00	1.989E+01
CORONA	2.181E+00	2.181E+00	1.287E+01	1.261E+01	1.280E+01	0.000E+00	-6.504E+00	1.985E+01
EOSOPA	2.211E+00	2.211E+00	1.199E+01	1.316E+01	1.293E+01	1.293E+01	0.000E+00	1.995E+01
HOPE	1.918E+00	1.918E+00	1.000E+01	1.061E+01	1.288E+01	0.000E+00	-6.526E+00	1.991E+01
I APC105	1.968E+00	1.914E+00	7.832E+00	6.140E+00	1.287E+01	0.000E+00	-6.502E+00	1.990E+01
JI MENA	3.148E+00	3.149E+00	1.823E+01	1.782E+01	1.288E+01	0.000E+00	-6.487E+00	1.990E+01
LANL77	2.156E+00	2.156E+00	1.062E+01	1.006E+01	1.293E+01	0.000E+00	-6.494E+00	1.995E+01
LED COP	2.155E+00	2.155E+00	1.111E+01	1.208E+01	1.288E+01	1.288E+01	-6.498E+00	1.991E+01
MONTECAR	2.594E+00	2.595E+00	1.326E+01	1.390E+01	1.288E+01	1.288E+01	-6.498E+00	1.991E+01
OPAL	2.131E+00	2.131E+00	1.245E+01	1.470E+01	1.288E+01	1.288E+01	-6.498E+00	1.991E+01
RACHEL	2.072E+00	2.070E+00	1.233E+01	1.132E+01	1.288E+01	0.000E+00	-6.520E+00	1.991E+01
SAPHI R	1.238E+00	1.238E+00	8.497E+00	8.570E+00	1.292E+01	1.292E+01	-6.498E+00	1.994E+01
SLYPI G	1.748E+00	1.748E+00	8.177E+00	8.133E+00	1.298E+01	1.298E+01	0.000E+00	1.999E+01
STA	2.082E+00	2.082E+00	1.199E+01	1.177E+01	1.293E+01	1.293E+01	-6.516E+00	1.995E+01
THERMOS	2.140E+00	2.135E+00	1.258E+01	1.228E+01	1.288E+01	1.293E+01	-6.521E+00	1.991E+01

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.al2	5.178E+00	6.011E+00	1.632E+00	4.675E-02	2.185E+00	CASSANDR
cor3.al2	4.612E+00	6.674E+00	1.394E+00	4.612E-02	2.118E+00	CORONA
eop3.al2	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	EOSOPA
hop3.al2	3.700E+00	4.978E+00	1.324E+00	2.876E-02	1.885E+00	HOPE
iap3.al2	1.458E+00	5.065E+00	1.258E+00	4.153E-02	1.903E+00	I APC105
jim3.al2	9.839E+00	6.165E+00	2.227E+00	5.510E-02	1.849E+00	JI MENA
l773.al2	3.037E+00	5.917E+00	1.672E+00	4.581E-02	2.112E+00	LANL77
l943.al2	4.737E+00	5.922E+00	1.639E+00	4.538E-02	2.109E+00	LED COP
mca3.al2	5.286E+00	6.022E+00	1.765E+00	4.324E-02	2.176E+00	MONTECAR
opa3.al2	4.843E+00	5.850E+00	1.755E+00	4.559E-02	2.097E+00	OPAL
rac3.al2	4.570E+00	5.675E+00	1.899E+00	6.288E-02	2.020E+00	RACHEL
sap3.al2	2.929E+00	3.802E+00	1.759E+00	5.816E-02	1.236E+00	SAPHI R
sly3.al2	2.953E+00	3.802E+00	1.422E+00	4.252E-02	1.651E+00	SLYPI G
sta3.al2	4.575E+00	5.731E+00	1.493E+00	4.433E-02	2.053E+00	STA
the3.al2	4.838E+00	5.903E+00	1.552E+00	4.694E-02	2.103E+00	THERMOS

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Z=18 Rho=5.7E-03 g/cc kT=

2. eV: CASE STUDY Ar 1

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z*W	mu/ kT	OmegaP
CORONA	1.589E+05	1.617E+05	9.778E+03	4.033E+03	4.430E-01	0.000E+00	-5.948E+00	2.291E-01
OPAL	6.321E+04	6.321E+04	2.612E+03	2.964E+03	3.960E-01	3.954E-01	-6.344E+00	2.166E-01
RACHEL	6.525E+04	6.524E+04	1.079E+05	9.754E+04	3.280E-01	0.000E+00	-6.445E+00	1.971E-01
SAPHI R	2.619E+03	2.619E+03	7.325E+04	7.830E+04	3.530E-01	3.532E-01	-6.177E+00	2.045E-01
STA	1.565E+03	1.565E+03	4.301E+04	4.230E+04	6.910E-01	1.000E+00	-7.131E+00	2.861E-01
THERMOS	3.278E+04	3.283E+04	6.709E+04	6.730E+04	4.330E-01	4.329E-01	-6.366E+00	2.265E-01

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE	
cor3.ar1	1.136E+03	1.794E+02	8.462E+03	8.969E+04	9.838E+04	CORONA	---
opa3.ar1	3.180E+02	1.159E+03	1.135E+03	2.365E+04	5.990E+04	OPAL	---
rac3.ar1	7.215E+04	3.477E+04	9.416E+02	3.289E+01	6.950E+02	RACHEL	---
sap3.ar1	3.721E+04	3.471E+04	1.058E+03	3.515E+01	7.372E+02	SAPHI R	---
sta3.ar1	2.524E+04	9.003E+03	8.769E+03	7.700E+02	1.084E+03	STA	---
the3.ar1	3.512E+04	3.191E+04	2.740E+02	1.529E+01	2.396E+03	THERMOS	---

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Z=26 Rho=1.0E-05 g/cc kT= 20. eV: CASE STUDY Fe1

CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z*W	mu/kT	OmegaP
CORONA	2.068E+02	2.091E+02	1.319E+04	1.319E+04	9.940E+00	0.000E+00	-1.313E+01	3.844E-02
HOPE	3.093E+02	3.091E+02	2.242E+04	2.240E+04	9.669E+00	1.000E+01	-1.337E+01	3.792E-02
IMP	4.201E+03	4.200E+03	3.787E+04	3.787E+04	9.664E+00	9.664E+00	-1.305E+01	3.791E-02
JIMENA	2.150E+04	2.139E+04	3.722E+04	3.750E+04	7.746E+00	0.000E+00	-1.337E+01	3.394E-02
LANL77	1.601E+01	1.585E+01	8.181E+02	1.024E+03	9.823E+00	9.823E+00	-1.314E+01	3.822E-02
MONTECAR	2.145E+03	2.145E+03	2.443E+04	2.436E+04	9.871E+00	9.871E+00	-1.314E+01	3.833E-02
MCstat DT	1.694E+03	1.703E+03	2.451E+04	2.441E+04	9.871E+00	9.871E+00	-1.314E+01	3.833E-02
OPAL	1.790E+03	1.790E+03	2.962E+04	2.969E+04	9.781E+00	9.781E+00	-1.315E+01	3.813E-02
OPALUTA	5.505E+03	5.505E+03	2.656E+04	2.625E+04	9.786E+00	9.786E+00	-1.315E+01	3.814E-02
RACHEL	5.647E+03	5.645E+03	2.019E+04	2.020E+04	9.731E+00	0.000E+00	-1.317E+01	3.804E-02
SAPHI R	2.843E+03	2.843E+03	2.453E+04	2.453E+04	9.537E+00	9.537E+00	-1.317E+01	3.766E-02
SADI R	2.697E+03	2.698E+03	3.071E+04	2.895E+04	9.744E+00	9.744E+00	-1.322E+01	3.806E-02
SADI RUTA	6.594E+03	6.595E+03	2.531E+04	2.531E+04	9.744E+00	9.744E+00	-1.322E+01	3.806E-02
STA	2.454E+03	2.453E+03	2.866E+04	2.866E+04	9.839E+00	9.839E+00	-1.320E+01	3.825E-02
THERMOS	2.449E+01	6.475E+01	2.187E+04	2.187E+04	9.858E+00	9.858E+00	-1.315E+01	3.829E-02
THERMUTA	1.751E+03	1.768E+03	2.322E+04	2.322E+04	9.858E+00	9.858E+00	-1.315E+01	3.829E-02

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cor3.fe1	1.285E+04	3.356E+02	1.362E+00	4.505E-02	1.019E+02	CORONA
hop3.fe1	2.239E+04	2.286E+01	2.196E+00	1.080E-01	1.042E+01	HOPE
imp3.fe1	3.782E+04	5.211E+01	1.513E+00	0.000E+00	3.018E+01	IMP
jim3.fe1	3.656E+04	6.611E+02	6.904E-01	2.098E-02	8.900E+01	JIMENA
l773.fe1	1.272E+03	1.066E+01	1.332E+00	4.143E-02	5.253E+00	LANL77
mca3.fe1	2.440E+04	2.596E+01	1.401E+00	4.272E-02	7.723E+00	MONTECAR
mcd3.fe1	2.448E+04	2.596E+01	1.401E+00	4.272E-02	7.723E+00	MCstat DT
opa3.fe1	2.958E+04	4.264E+01	2.387E+00	1.072E-01	1.521E+01	OPAL
opu3.fe1	2.652E+04	3.434E+01	2.370E+00	1.064E-01	2.947E+00	OPALUTA
rac3.fe1	2.015E+04	4.210E+01	1.620E+00	5.354E-02	5.738E+00	RACHEL
sap3.fe1	2.452E+04	7.084E+00	1.212E+00	4.009E-02	1.114E+00	SAPHI R
sdr3.fe1	3.068E+04	2.671E+01	1.190E-01	1.448E-02	3.850E+00	SADI R
sdu3.fe1	2.528E+04	2.861E+01	1.190E-01	1.448E-02	6.934E+00	SADI RUTA
sta3.fe1	2.862E+04	4.301E+01	1.429E+00	8.736E-02	9.794E+00	STA
the3.fe1	2.183E+04	4.241E+01	8.566E-01	4.196E-02	8.642E+00	THERMOS
thu3.fe1	2.317E+04	4.241E+01	8.566E-01	4.196E-02	8.642E+00	THERMUTA

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WorkOp-III:94 Final

Z=26 Rho=1.0E-04 g/cc kT= 20. eV: CASE STUDY Fe2

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
CORONA	2.215E+03	2.236E+03	2.424E+04	2.424E+04	8.601E+00	0.000E+00	-1.097E+01	1.131E-01
HOPE	1.395E+03	1.393E+03	2.918E+04	2.922E+04	8.430E+00	8.837E+00	-1.115E+01	1.120E-01
IMP	1.079E+04	1.079E+04	4.912E+04	4.912E+04	8.558E+00	8.558E+00	-1.094E+01	1.128E-01
JIMENA	2.159E+04	2.148E+04	3.723E+04	3.750E+04	7.746E+00	0.000E+00	-1.106E+01	1.073E-01
LANL77	1.522E+02	1.515E+02	4.585E+03	5.940E+03	8.702E+00	8.745E+00	-1.096E+01	1.137E-01
LED COP	6.750E+03	6.750E+03	2.922E+04	2.922E+04	8.555E+00	8.555E+00	-1.098E+01	1.128E-01
LED COUTA	9.786E+03	9.785E+03	3.003E+04	3.003E+04	8.555E+00	8.555E+00	-1.098E+01	1.128E-01
MONTECAR	7.636E+03	7.635E+03	3.096E+04	3.124E+04	8.746E+00	8.746E+00	-1.095E+01	1.142E-01
MCst at DT	6.190E+03	6.193E+03	3.099E+04	3.104E+04	8.746E+00	8.746E+00	-1.095E+01	1.142E-01
OPAL	6.030E+03	6.030E+03	3.792E+04	3.994E+04	8.616E+00	8.616E+00	-1.098E+01	1.132E-01
OPALUTA	1.232E+04	1.232E+04	3.351E+04	3.246E+04	8.629E+00	8.629E+00	-1.098E+01	1.133E-01
RACHEL	8.078E+03	8.075E+03	2.464E+04	2.456E+04	8.532E+00	0.000E+00	-1.101E+01	1.126E-01
SAPHI R	6.075E+03	6.075E+03	3.154E+04	3.154E+04	8.417E+00	8.416E+00	-1.099E+01	1.119E-01
SADI R	8.232E+03	8.246E+03	3.676E+04	3.692E+04	8.553E+00	8.553E+00	-1.104E+01	1.128E-01
SADI RUTA	1.449E+04	1.449E+04	3.237E+04	3.237E+04	8.553E+00	8.553E+00	-1.104E+01	1.128E-01
STA	7.659E+03	7.659E+03	3.654E+04	3.654E+04	8.704E+00	8.704E+00	-1.104E+01	1.138E-01
THERMOS	2.421E+02	4.514E+02	2.545E+04	2.547E+04	8.723E+00	8.723E+00	-1.099E+01	1.139E-01
THERMUTA	7.380E+03	7.449E+03	3.086E+04	3.088E+04	8.723E+00	8.723E+00	-1.099E+01	1.139E-01

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cor3.fe2	2.244E+04	1.787E+03	9.021E+00	2.983E-01	1.140E+03	CORONA
hop3.fe2	2.903E+04	1.344E+02	1.846E+01	9.900E-01	5.930E+01	HOPE
imp3.fe2	4.886E+04	2.528E+02	8.600E+00	0.000E+00	1.419E+02	IMP
jim3.fe2	3.656E+04	6.611E+02	6.904E+00	2.098E-01	1.092E+02	JIMENA
l773.fe2	4.515E+03	6.668E+01	9.291E+00	2.887E-01	3.283E+01	LANL77
l943.fe2	2.901E+04	2.039E+02	8.943E+00	2.764E-01	7.304E+01	LED COP
l9u3.fe2	2.982E+04	2.039E+02	8.943E+00	2.764E-01	7.304E+01	LED COUTA
mca3.fe2	3.078E+04	1.663E+02	9.912E+00	3.007E-01	6.236E+01	MONTECAR
mcd3.fe2	3.081E+04	1.663E+02	9.912E+00	3.007E-01	6.236E+01	MCst at DT
opa3.fe2	3.769E+04	2.109E+02	1.782E+01	9.020E-01	8.370E+01	OPAL
opu3.fe2	3.330E+04	1.921E+02	1.758E+01	8.887E-01	6.641E+01	OPALUTA
rac3.fe2	2.439E+04	2.379E+02	9.047E+00	2.997E-01	3.679E+01	RACHEL
sap3.fe2	3.148E+04	4.440E+01	8.431E+00	2.793E-01	1.121E+01	SAPHI R
sdr3.fe2	3.659E+04	1.624E+02	1.538E+00	1.687E-01	3.493E+01	SADI R
sdu3.fe2	3.219E+04	1.712E+02	1.538E+00	1.687E-01	5.090E+01	SADI RUTA
sta3.fe2	3.634E+04	1.958E+02	1.008E+01	5.512E-01	5.876E+01	STA
the3.fe2	2.525E+04	2.145E+02	4.948E+00	2.763E-01	5.590E+01	THERMOS
thu3.fe2	3.066E+04	2.145E+02	4.948E+00	2.763E-01	5.590E+01	THERMUTA

WorkOp-III:94 Final

WorkOp-III:94 Final

Z=26 Rho=1.0E-03 g/cc kT= 20. eV: CASE STUDY Fe3

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z*W	mu/ kT	OmegaP
CASSANDR	2.082E+04	2.081E+04	3.577E+04	3.577E+04	7.234E+00	0.000E+00-8.839E+00	3.280E-01	
CORONA	1.711E+04	1.735E+04	4.397E+04	4.406E+04	7.192E+00	0.000E+00-8.848E+00	3.270E-01	
HOPE	4.680E+03	4.678E+03	3.669E+04	3.677E+04	7.044E+00	7.723E+00-8.967E+00	3.236E-01	
IMP	2.112E+04	2.111E+04	6.059E+04	6.059E+04	7.442E+00	7.442E+00-8.815E+00	3.326E-01	
JI MENA	2.414E+04	2.409E+04	3.859E+04	3.897E+04	7.553E+00	0.000E+00-8.742E+00	3.351E-01	
LANL77	1.793E+03	1.797E+03	1.591E+04	1.556E+04	7.483E+00	7.483E+00-8.808E+00	3.336E-01	
MONTECAR	1.619E+04	1.619E+04	3.870E+04	3.923E+04	7.588E+00	7.588E+00-8.780E+00	3.384E-01	
MCstat DT	1.497E+04	1.502E+04	3.884E+04	3.907E+04	7.588E+00	7.588E+00-8.780E+00	3.384E-01	
OPAL	1.621E+04	1.621E+04	4.769E+04	4.820E+04	7.395E+00	7.395E+00-8.843E+00	3.316E-01	
OPALUTA	2.122E+04	2.121E+04	4.217E+04	4.613E+04	7.407E+00	7.407E+00-8.843E+00	3.319E-01	
RACHEL	1.216E+04	1.215E+04	3.012E+04	2.959E+04	7.301E+00	0.000E+00-8.881E+00	3.295E-01	
SAPHI R	1.150E+04	1.150E+04	3.946E+04	3.946E+04	7.518E+00	7.518E+00-8.805E+00	3.343E-01	
SADI R	1.948E+04	1.948E+04	4.638E+04	4.580E+04	7.178E+00	7.178E+00-8.860E+00	3.267E-01	
SADI RUTA	2.432E+04	2.432E+04	4.121E+04	4.121E+04	7.178E+00	7.178E+00-8.860E+00	3.267E-01	
STA	1.526E+04	1.526E+04	4.559E+04	4.559E+04	7.495E+00	7.496E+00-8.903E+00	3.338E-01	
THERMOS	2.152E+03	3.073E+03	3.882E+04	3.886E+04	7.499E+00	7.499E+00-8.859E+00	3.339E-01	
THERMUTA	1.669E+04	1.684E+04	3.856E+04	3.859E+04	7.499E+00	7.499E+00-8.859E+00	3.339E-01	

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.fe3	3.433E+04	1.364E+03	7.059E+01	5.157E+00	6.675E+02	CASSANDR
cor3.fe3	3.540E+04	8.516E+03	5.609E+01	1.855E+00	7.830E+03	CORONA
hop3.fe3	3.578E+04	7.554E+02	1.545E+02	9.896E+00	3.027E+02	HOPE
imp3.fe3	5.953E+04	1.008E+03	4.976E+01	0.000E+00	6.006E+02	IMP
jim3.fe3	3.764E+04	8.841E+02	6.440E+01	1.949E+00	1.580E+02	JI MENA
l773.fe3	1.535E+04	4.944E+02	5.884E+01	1.840E+00	1.948E+02	LANL77
mca3.fe3	3.766E+04	9.704E+02	6.664E+01	2.008E+00	4.066E+02	MONTECAR
mc3.fe3	3.780E+04	9.704E+02	6.664E+01	2.008E+00	4.066E+02	MCstat DT
opa3.fe3	4.690E+04	6.620E+02	1.276E+02	7.413E+00	3.159E+02	OPAL
opu3.fe3	4.142E+04	6.312E+02	1.255E+02	7.283E+00	2.975E+02	OPALUTA
rac3.fe3	2.888E+04	1.197E+03	4.582E+01	1.522E+00	2.052E+02	RACHEL
sap3.fe3	3.906E+04	3.384E+02	6.122E+01	2.025E+00	1.101E+02	SAPHI R
sdr3.fe3	4.534E+04	9.805E+02	6.750E+01	4.119E+00	3.519E+02	SADI R
sdu3.fe3	4.012E+04	1.014E+03	6.750E+01	4.119E+00	4.035E+02	SADI RUTA
sta3.fe3	4.481E+04	7.109E+02	6.649E+01	4.148E+00	3.061E+02	STA
the3.fe3	3.774E+04	1.093E+03	2.585E+01	1.639E+00	2.928E+02	THERMOS
thu3.fe3	3.747E+04	1.093E+03	2.585E+01	1.639E+00	2.928E+02	THERMUTA

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Z=26 Rho=1.0E-02 g/cc kT= 20. eV: CASE STUDY Fe4

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z*W	mu/ kT	OmegaP
CASSANDR	3.095E+04	3.091E+04	4.776E+04	4.778E+04	5.920E+00	0.000E+00	-6.741E+00	9.382E-01
CORONA	6.626E+04	6.693E+04	8.464E+04	8.519E+04	5.660E+00	0.000E+00	-6.785E+00	9.174E-01
HOPE	1.369E+04	1.369E+04	4.490E+04	4.487E+04	5.608E+00	5.692E+00	-6.914E+00	9.131E-01
IMP	3.140E+04	3.140E+04	7.276E+04	7.275E+04	6.337E+00	6.337E+00	-6.728E+00	9.707E-01
JIMENA	3.667E+04	3.676E+04	4.921E+04	4.966E+04	6.247E+00	0.000E+00	-6.535E+00	9.637E-01
LANL77	1.035E+04	1.034E+04	3.415E+04	3.275E+04	6.264E+00	6.264E+00	-6.684E+00	9.650E-01
LEDCOP	3.068E+04	3.068E+04	5.739E+04	5.734E+04	6.139E+00	6.139E+00	-6.704E+00	9.554E-01
MONTECAR	2.707E+04	2.707E+04	4.906E+04	4.901E+04	6.309E+00	6.309E+00	-6.653E+00	9.801E-01
MCst at DT	2.738E+04	2.738E+04	4.894E+04	4.893E+04	6.309E+00	6.309E+00	-6.653E+00	9.801E-01
OPAL	2.932E+04	2.932E+04	6.030E+04	5.996E+04	6.160E+00	6.160E+00	-6.764E+00	9.570E-01
OPALUTA	3.086E+04	3.086E+04	5.477E+04	5.775E+04	6.159E+00	6.159E+00	-6.764E+00	9.569E-01
RACHEL	1.543E+04	1.543E+04	3.633E+04	3.396E+04	6.005E+00	0.000E+00	-6.809E+00	9.449E-01
SAPHI R	1.660E+04	1.660E+04	5.071E+04	5.069E+04	6.364E+00	6.364E+00	-6.670E+00	9.727E-01
STA	2.577E+04	2.576E+04	5.566E+04	5.566E+04	6.101E+00	6.103E+00	-6.846E+00	9.524E-01
THERMOS	1.332E+04	1.494E+04	4.967E+04	4.971E+04	6.144E+00	6.144E+00	-6.794E+00	9.558E-01
THERMUTA	2.838E+04	2.851E+04	4.900E+04	4.903E+04	6.144E+00	6.144E+00	-6.794E+00	9.558E-01

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.fe4	4.124E+04	6.085E+03	4.302E+02	4.001E+01	4.542E+03	CASSANDR
cor3.fe4	4.713E+04	3.719E+04	3.230E+02	1.068E+01	3.183E+04	CORONA
hop3.fe4	4.014E+04	3.707E+03	1.052E+03	6.905E+01	1.711E+03	HOPE
imp3.fe4	6.784E+04	4.656E+03	2.606E+02	0.000E+00	3.139E+03	IMP
jim3.fe4	4.369E+04	5.148E+03	3.770E+02	1.120E+01	7.611E+02	JIMENA
l773.fe4	3.122E+04	2.597E+03	3.282E+02	1.079E+01	1.550E+03	LANL77
l943.fe4	5.175E+04	5.264E+03	3.734E+02	1.078E+01	3.207E+03	LEDCOP
mca3.fe4	4.428E+04	4.387E+03	3.952E+02	1.179E+01	1.929E+03	MONTECAR
mcd3.fe4	4.416E+04	4.387E+03	3.952E+02	1.179E+01	1.929E+03	MCst at DT
opa3.fe4	5.552E+04	3.910E+03	8.746E+02	5.954E+01	2.268E+03	OPAL
opu3.fe4	5.006E+04	3.848E+03	8.631E+02	5.877E+01	2.197E+03	OPALUTA
rac3.fe4	3.108E+04	5.047E+03	2.045E+02	6.793E+00	1.091E+03	RACHEL
sap3.fe4	4.839E+04	1.936E+03	3.817E+02	1.262E+01	6.526E+02	SAPHI R
sta3.fe4	5.174E+04	3.559E+03	3.567E+02	2.916E+01	1.755E+03	STA
the3.fe4	4.455E+04	5.037E+03	1.188E+02	8.362E+00	1.286E+03	THERMOS
thu3.fe4	4.388E+04	5.037E+03	1.188E+02	8.362E+00	1.286E+03	THERMUTA

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Z=26 Rho=7.9E+00 g/cc kT= 200. eV: CASE STUDY Fe5

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z*W	mu/ kT	OmegaP
CASSANDR	3.433E+03	3.416E+03	5.808E+03	5.909E+03	1.468E+01	0.000E+00	-2.766E+00	4.142E+01
CORONA	3.685E+03	3.689E+03	6.451E+03	6.068E+03	1.322E+01	0.000E+00	-2.700E+00	3.931E+01
HAFPO	2.137E+03	2.175E+03	6.697E+03	6.735E+03	1.400E+01	1.130E+01	-2.767E+00	4.045E+01
HOPE	2.811E+03	2.811E+03	6.088E+03	6.077E+03	1.346E+01	1.362E+01	-2.855E+00	3.966E+01
IMP	2.790E+03	2.674E+03	7.120E+03	6.644E+03	1.367E+01	1.367E+01	-2.640E+00	3.997E+01
JI MENA	4.607E+03	4.615E+03	8.508E+03	8.194E+03	1.408E+01	0.000E+00	-2.352E+00	4.056E+01
JI MENADC	1.848E+03	1.850E+03	6.897E+03	6.606E+03	1.450E+01	1.450E+01	-2.313E+00	4.116E+01
LANL77	2.773E+03	2.768E+03	7.390E+03	7.389E+03	1.451E+01	0.000E+00	-2.606E+00	4.118E+01
LEDCOP	2.711E+03	2.711E+03	5.870E+03	5.873E+03	1.442E+01	1.442E+01	-2.718E+00	4.105E+01
MONTECAR	3.428E+03	3.428E+03	6.098E+03	5.883E+03	1.442E+01	1.442E+01	-2.772E+00	3.796E+01
OPAL	3.932E+03	3.932E+03	7.535E+03	7.888E+03	1.337E+01	1.337E+01	-2.777E+00	3.953E+01
RACHEL	2.352E+03	2.352E+03	4.403E+03	4.063E+03	1.354E+01	0.000E+00	-2.826E+00	3.978E+01
SAPHI R	1.508E+03	1.508E+03	6.751E+03	6.517E+03	1.487E+01	1.487E+01	-2.607E+00	4.169E+01
SLYPI G	2.265E+03	2.265E+03	4.770E+03	4.512E+03	1.577E+01	1.577E+01	0.000E+00	4.293E+01
STA	2.871E+03	2.871E+03	6.636E+03	6.559E+03	1.402E+01	1.403E+01	-2.776E+00	4.048E+01
THERMOS	2.282E+03	2.295E+03	5.366E+03	5.318E+03	1.413E+01	1.413E+01	-2.770E+00	4.064E+01
THERMUTA	2.312E+03	2.317E+03	5.386E+03	5.338E+03	1.413E+01	1.413E+01	-2.770E+00	4.064E+01

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.fe5	2.674E+03	2.379E+03	7.550E+02	6.838E+01	1.681E+03	CASSANDR
cor3.fe5	3.516E+03	1.702E+03	1.233E+03	4.076E+01	8.301E+02	CORONA
haf3.fe5	3.028E+03	2.924E+03	7.371E+02	4.922E+01	1.351E+03	HAFPO
hop3.fe5	3.501E+03	2.228E+03	3.585E+02	1.846E+01	1.170E+03	HOPE
imp3.fe5	3.390E+03	2.891E+03	8.388E+02	0.000E+00	1.681E+03	IMP
jim3.fe5	4.646E+03	2.772E+03	1.091E+03	3.066E+01	1.098E+03	JI MENA
jim3.fe5	5.001E+03	7.125E+02	1.183E+03	3.416E+01	4.289E+02	JI MENADC
l773.fe5	4.170E+03	2.635E+03	5.860E+02	3.172E+01	1.052E+03	LANL77
l943.fe5	3.142E+03	2.202E+03	5.259E+02	2.844E+01	1.246E+03	LEDCOP
mca3.fe5	2.676E+03	2.422E+03	9.989E+02	2.920E+01	1.266E+03	MONTECAR
opa3.fe5	3.207E+03	3.044E+03	1.284E+03	7.074E+01	2.361E+03	OPAL
rac3.fe5	2.300E+03	1.646E+03	4.576E+02	1.520E+01	9.067E+02	RACHEL
sap3.fe5	4.396E+03	1.109E+03	1.245E+03	4.120E+01	5.959E+02	SAPHI R
sl33.fe5	2.541E+03	1.038E+03	1.191E+03	3.884E+01	7.161E+02	SLYPI G
sta3.fe5	3.147E+03	2.652E+03	8.367E+02	6.087E+01	1.678E+03	STA
the3.fe5	2.754E+03	2.109E+03	4.994E+02	2.875E+01	1.056E+03	THERMOS
thu3.fe5	2.775E+03	2.109E+03	4.994E+02	2.875E+01	1.056E+03	THERMUTA

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Z=26 Rho=1.0E+00 g/cc kT= 500. eV: CASE STUDY Fe6

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
CASSANDR	7.929E+01	7.929E+01	4.188E+02	4.197E+02	2.232E+01	0.000E+00-5.690E+00	1.822E+01	
CORONA	7.265E+01	7.278E+01	3.806E+02	3.794E+02	2.196E+01	0.000E+00-5.651E+00	1.807E+01	
HOPE	7.824E+01	7.824E+01	3.979E+02	3.992E+02	2.220E+01	2.223E+01-5.706E+00	1.817E+01	
I APC105	5.729E+01	5.722E+01	3.667E+02	3.589E+02	2.261E+01	2.266E+01-5.623E+00	1.834E+01	
I MP	8.879E+01	8.879E+01	4.273E+02	4.264E+02	2.314E+01	2.314E+01-5.621E+00	1.855E+01	
JI MENA	6.271E+01	6.272E+01	4.105E+02	4.089E+02	2.249E+01	0.000E+00-5.587E+00	1.829E+01	
LANL77	6.131E+01	6.131E+01	3.965E+02	4.160E+02	2.265E+01	0.000E+00-5.621E+00	1.835E+01	
LEDCOP	7.482E+01	7.482E+01	3.936E+02	3.973E+02	2.268E+01	2.268E+01-5.620E+00	1.836E+01	
MONTECAR	8.562E+01	8.562E+01	1.013E+03	1.013E+03	2.250E+01	2.250E+01-5.683E+00	1.779E+01	
OPAL	8.419E+01	8.419E+01	4.297E+02	4.184E+02	2.253E+01	2.253E+01-5.631E+00	1.830E+01	
RACHEL	5.922E+01	5.922E+01	3.006E+02	2.901E+02	2.231E+01	0.000E+00-5.686E+00	1.821E+01	
SAPHI R	2.946E+01	2.941E+01	2.186E+02	2.189E+02	2.299E+01	2.299E+01-5.610E+00	1.849E+01	
SLYPI G	6.056E+01	6.056E+01	3.007E+02	2.997E+02	2.323E+01	2.323E+01 0.000E+00	1.858E+01	
STA	7.177E+01	7.177E+01	4.034E+02	4.027E+02	2.236E+01	2.236E+01-5.688E+00	1.823E+01	
THERMOS	7.963E+01	7.937E+01	4.499E+02	4.482E+02	2.235E+01	2.282E+01-5.684E+00	1.823E+01	

FI LE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.fe6	3.005E+02	9.849E+01	1.988E+01	7.511E-01	5.880E+01	CASSANDR
cor3.fe6	2.639E+02	9.628E+01	2.033E+01	6.725E-01	5.041E+01	CORONA
hop3.fe6	2.874E+02	8.934E+01	2.116E+01	5.521E-01	5.663E+01	HOPE
iap3.fe6	2.742E+02	6.239E+01	2.654E+01	5.434E-01	3.276E+01	I APC105
imp3.fe6	3.004E+02	1.087E+02	1.800E+01	0.000E+00	6.435E+01	I MP
jim3.fe6	2.972E+02	8.848E+01	2.480E+01	6.886E-01	4.661E+01	JI MENA
l773.fe6	2.862E+02	8.989E+01	2.067E+01	6.543E-01	4.472E+01	LANL77
l943.fe6	2.895E+02	8.348E+01	2.071E+01	6.582E-01	4.940E+01	LEDCOP
mca3.fe6	2.893E+02	7.021E+02	2.153E+01	6.281E-01	6.236E+01	MONTECAR
opa3.fe6	3.233E+02	8.053E+01	2.590E+01	7.919E-01	4.818E+01	OPAL
rac3.fe6	2.094E+02	7.488E+01	1.621E+01	5.367E-01	4.061E+01	RACHEL
sap3.fe6	1.609E+02	3.393E+01	2.370E+01	7.837E-01	2.446E+01	SAPHI R
sly3.fe6	2.204E+02	6.010E+01	2.017E+01	6.439E-01	3.545E+01	SLYPI G
sta3.fe6	2.941E+02	8.959E+01	1.955E+01	7.458E-01	5.347E+01	STA
the3.fe6	3.179E+02	1.141E+02	1.633E+01	6.571E-01	5.657E+01	THERMOS

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Z=26 Rho=1.0E+00 g/cc kT= 1000. eV: CASE STUDY Fe7

CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z* W	mu/ kT	OmegaP
CASSANDR	2.998E+00	2.998E+00	6.716E+01	6.722E+01	2.391E+01	0.000E+00	-6.637E+00	1.885E+01
CORONA	3.933E+00	3.941E+00	7.244E+01	7.225E+01	2.367E+01	0.000E+00	-6.617E+00	1.876E+01
HOPE	3.558E+00	3.558E+00	7.067E+01	7.384E+01	2.378E+01	0.000E+00	-6.653E+00	1.880E+01
I APC105	3.732E+00	3.724E+00	3.513E+01	3.037E+01	2.389E+01	0.000E+00	-6.611E+00	1.885E+01
I MP	3.021E+00	3.021E+00	7.277E+01	7.254E+01	2.422E+01	2.422E+01	-6.611E+00	1.898E+01
JI MENA	2.028E+00	2.029E+00	1.261E+01	1.240E+01	2.398E+01	0.000E+00	-6.588E+00	1.888E+01
LANL77	2.754E+00	2.755E+00	2.426E+01	2.687E+01	2.391E+01	0.000E+00	-6.607E+00	1.885E+01
LEDCOP	2.785E+00	2.785E+00	4.810E+01	6.463E+01	2.394E+01	2.394E+01	-6.606E+00	1.887E+01
MONTECAR	4.393E+00	4.393E+00	7.312E+01	6.994E+01	2.389E+01	2.389E+01	-6.635E+00	1.859E+01
OPAL	3.478E+00	3.478E+00	7.059E+01	9.261E+01	2.386E+01	2.386E+01	-6.606E+00	1.883E+01
RACHEL	3.387E+00	3.386E+00	7.181E+01	7.120E+01	2.383E+01	0.000E+00	-6.639E+00	1.882E+01
SAPHI R	2.397E+00	2.378E+00	5.553E+01	6.539E+01	2.372E+01	2.372E+01	-6.617E+00	1.878E+01
SLYPI G	3.481E+00	3.481E+00	7.323E+01	7.328E+01	2.420E+01	2.420E+01	0.000E+00	1.897E+01
STA	2.738E+00	2.738E+00	6.891E+01	6.868E+01	2.389E+01	2.389E+01	-6.637E+00	1.885E+01
THERMOS	3.139E+00	3.136E+00	7.007E+01	6.999E+01	2.391E+01	2.415E+01	-6.636E+00	1.885E+01

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.fe7	5.554E+01	9.319E+00	2.304E+00	7.581E-02	2.559E+00	CASSANDR
cor3.fe7	5.983E+01	1.034E+01	2.103E+00	6.954E-02	1.830E+00	CORONA
hop3.fe7	5.976E+01	8.662E+00	2.242E+00	5.152E-02	2.216E+00	HOPE
iap3.fe7	2.501E+01	7.100E+00	2.775E+00	5.182E-02	1.487E+00	I APC105
imp3.fe7	6.065E+01	1.007E+01	1.851E+00	0.000E+00	2.518E+00	I MP
jim3.fe7	3.455E-01	9.445E+00	2.821E+00	7.617E-02	1.652E+00	JI MENA
l773.fe7	1.468E+01	9.061E+00	2.324E+00	6.925E-02	1.761E+00	LANL77
l943.fe7	5.476E+01	8.629E+00	2.309E+00	6.954E-02	2.006E+00	LEDCOP
mca3.fe7	6.144E+01	9.094E+00	2.406E+00	6.679E-02	2.154E+00	MONTECAR
opa3.fe7	5.940E+01	8.456E+00	2.735E+00	7.738E-02	1.924E+00	OPAL
rac3.fe7	6.074E+01	8.609E+00	2.293E+00	7.583E-02	1.791E+00	RACHEL
sap3.fe7	4.689E+01	6.129E+00	2.395E+00	7.920E-02	1.875E+00	SAPHI R
sly3.fe7	6.428E+01	6.911E+00	2.048E+00	6.430E-02	1.458E+00	SLYPI G
sta3.fe7	5.774E+01	8.693E+00	2.294E+00	7.954E-02	2.087E+00	STA
the3.fe7	5.676E+01	1.112E+01	2.136E+00	7.254E-02	2.153E+00	THERMOS

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Z=26 Rho=1.3E-02 g/cc kT= 59. eV: CASE STUDY Fe8

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
CASSANDR	3.886E+03	3.885E+03	9.009E+03	9.013E+03	1.249E+01	0.000E+00	-7.397E+00	1.536E+00
CORONA	2.675E+03	2.682E+03	9.079E+03	9.042E+03	1.293E+01	0.000E+00	-7.343E+00	1.563E+00
HOPE	3.654E+03	3.653E+03	6.861E+03	6.858E+03	1.227E+01	1.266E+01	-7.474E+00	1.522E+00
I APC105	3.297E+03	3.292E+03	1.213E+04	1.238E+04	1.282E+01	0.000E+00	-7.351E+00	1.556E+00
I MP	3.899E+03	3.899E+03	8.685E+03	8.682E+03	1.323E+01	1.323E+01	-7.306E+00	1.581E+00
JI MENA	2.284E+03	2.280E+03	7.808E+03	7.792E+03	1.299E+01	0.000E+00	-7.271E+00	1.566E+00
LEDCOP	3.511E+03	3.511E+03	8.006E+03	8.002E+03	1.283E+01	1.287E+01	-7.327E+00	1.575E+00
MONTECAR	3.256E+03	3.256E+03	7.575E+03	7.572E+03	1.314E+01	1.314E+01	-7.395E+00	1.522E+00
OPAL	3.422E+03	3.422E+03	8.301E+03	8.331E+03	1.279E+01	1.279E+01	-7.376E+00	1.554E+00
RACHEL	3.015E+03	3.015E+03	5.512E+03	5.327E+03	1.257E+01	0.000E+00	-7.429E+00	1.541E+00
SAPHI R	1.407E+03	1.406E+03	4.225E+03	4.223E+03	1.391E+01	1.391E+01	-7.272E+00	1.621E+00
SLYPI G	1.430E+03	1.430E+03	7.279E+03	7.278E+03	1.334E+01	1.334E+01	0.000E+00	1.587E+00
STA	3.369E+03	3.369E+03	8.050E+03	8.048E+03	1.291E+01	1.291E+01	-7.431E+00	1.561E+00
THERMOS	3.243E+03	3.483E+03	8.686E+03	8.680E+03	1.279E+01	1.279E+01	-7.414E+00	1.554E+00
THERMUTA	3.652E+03	3.681E+03	8.781E+03	8.776E+03	1.279E+01	1.279E+01	-7.414E+00	1.554E+00

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.fe8	8.061E+03	8.563E+02	9.156E+01	4.749E+00	7.112E+02	CASSANDR
cor3.fe8	8.285E+03	6.999E+02	9.422E+01	3.116E+00	5.725E+02	CORONA
hop3.fe8	6.088E+03	6.279E+02	1.453E+02	6.301E+00	5.017E+02	HOPE
iap3.fe8	1.161E+04	4.146E+02	1.019E+02	2.715E+00	2.596E+02	I APC105
imp3.fe8	7.820E+03	7.809E+02	8.427E+01	0.000E+00	5.607E+02	I MP
jim0.fe8	7.196E+03	5.160E+02	9.588E+01	2.854E+00	2.680E+02	JI MENA
l943.fe8	7.175E+03	7.512E+02	7.963E+01	2.409E+00	5.930E+02	LEDCOP
mca3.fe8	6.834E+03	6.501E+02	9.090E+01	2.746E+00	5.016E+02	MONTECAR
opa3.fe8	7.666E+03	4.961E+02	1.394E+02	5.899E+00	3.486E+02	OPAL
rac3.fe8	4.850E+03	6.030E+02	5.977E+01	1.979E+00	3.088E+02	RACHEL
sap3.fe8	3.989E+03	1.263E+02	1.101E+02	3.641E+00	9.191E+01	SAPHI R
sly3.fe8	6.842E+03	3.521E+02	8.490E+01	2.753E+00	1.534E+02	SLYPI G
sta3.fe8	7.292E+03	6.714E+02	8.665E+01	4.228E+00	5.333E+02	STA
the3.fe8	7.882E+03	7.571E+02	4.115E+01	2.435E+00	4.371E+02	THERMOS
thu3.fe8	7.978E+03	7.571E+02	4.115E+01	2.435E+00	4.371E+02	THERMUTA

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Z=32 Rho=1.0E-02 g/cc kT= 50. eV: CASE STUDY Ge1

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z*W	mu/ kT	OmegaP
CASSANDR	6.934E+03	6.932E+03	1.527E+04	1.527E+04	1.190E+01	0.000E+00	-7.692E+00	1.167E+00
CORONA	4.667E+03	4.747E+03	1.879E+04	1.875E+04	1.209E+01	0.000E+00	-7.663E+00	1.176E+00
HOPE	3.368E+03	3.367E+03	1.374E+04	1.374E+04	1.160E+01	1.177E+01	-7.781E+00	1.152E+00
I APC105	9.158E+03	9.067E+03	3.516E+04	3.505E+04	1.180E+01	0.000E+00	-7.687E+00	1.162E+00
JI MENA	5.133E+03	5.137E+03	1.418E+04	1.418E+04	1.240E+01	0.000E+00	-7.573E+00	1.191E+00
MONTECAR	4.747E+03	4.747E+03	1.472E+04	1.472E+04	1.242E+01	1.242E+01	-7.631E+00	1.195E+00
RACHEL	7.173E+03	7.172E+03	1.028E+04	1.005E+04	1.196E+01	0.000E+00	-7.730E+00	1.170E+00
SAPHI R	4.137E+03	4.137E+03	1.376E+04	1.376E+04	1.241E+01	1.241E+01	-7.638E+00	1.191E+00
SADI R	4.765E+03	4.763E+03	1.469E+04	1.469E+04	1.242E+01	1.242E+01	-7.631E+00	1.195E+00
SLYPI G	4.110E+02	4.110E+02	6.350E+03	6.371E+03	1.238E+01	1.238E+01	0.000E+00	1.190E+00
SNOP	3.444E+03	3.445E+03	2.374E+04	2.374E+04	1.278E+01	1.278E+01	0.000E+00	1.209E+00
STA	5.597E+03	5.596E+03	1.603E+04	1.603E+04	1.225E+01	1.225E+01	-7.730E+00	1.184E+00
THERMOS	3.498E+03	4.630E+03	1.478E+04	1.480E+04	1.220E+01	1.220E+01	-7.712E+00	1.181E+00
THERMUTA	6.103E+03	6.140E+03	1.525E+04	1.529E+04	1.220E+01	1.220E+01	-7.712E+00	1.181E+00

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.ge1	1.434E+04	8.508E+02	7.216E+01	4.688E+00	5.522E+02	CASSANDR
cor3.ge1	1.747E+04	1.257E+03	6.451E+01	2.132E+00	6.326E+02	CORONA
hop3.ge1	1.300E+04	6.083E+02	1.338E+02	7.131E+00	3.059E+02	HOPE
iap3.ge1	3.479E+04	3.096E+02	6.572E+01	1.768E+00	1.778E+02	I APC105
jim3.ge1	1.354E+04	5.687E+02	6.780E+01	2.060E+00	1.648E+02	JI MENA
mca3.ge1	1.397E+04	6.850E+02	6.853E+01	2.076E+00	3.573E+02	MONTECAR
rac3.ge1	9.591E+03	6.516E+02	3.853E+01	1.276E+00	2.132E+02	RACHEL
sap3.ge1	1.337E+04	3.261E+02	6.555E+01	2.166E+00	4.687E+01	SAPHI R
sdr3.ge1	1.394E+04	6.850E+02	6.853E+01	2.076E+00	3.573E+02	SADI R
sly3.ge1	6.031E+03	2.630E+02	5.650E+01	1.836E+00	6.118E+01	SLYPI G
sno3.ge1	2.310E+04	5.831E+02	5.512E+01	2.234E+00	1.213E+01	SNOP
sta3.ge1	1.521E+04	7.547E+02	6.865E+01	4.122E+00	4.009E+02	STA
the3.ge1	1.398E+04	7.926E+02	3.055E+01	1.735E+00	3.262E+02	THERMOS
thu3.ge1	1.446E+04	7.926E+02	3.055E+01	1.735E+00	3.262E+02	THERMUTA

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Z=32 Rho=5.0E-02 g/cc kT= 76. eV: CASE STUDY Ge2

CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z*W	mu/kT	OmegaP
CASSANDR	5.548E+03	5.546E+03	1.151E+04	1.152E+04	1.387E+01	0.000E+00	-6.588E+00	2.817E+00
CORONA	5.389E+03	5.425E+03	1.344E+04	1.344E+04	1.404E+01	0.000E+00	-6.531E+00	2.833E+00
HOPE	4.383E+03	4.383E+03	1.032E+04	1.031E+04	1.353E+01	1.416E+01	-6.659E+00	2.782E+00
IAPC105	6.182E+03	6.166E+03	2.023E+04	2.026E+04	1.400E+01	0.000E+00	-6.534E+00	2.830E+00
JI MENA	3.693E+03	3.700E+03	1.056E+04	1.057E+04	1.441E+01	0.000E+00	-6.417E+00	2.871E+00
MONTECAR	4.506E+03	4.506E+03	1.093E+04	1.092E+04	1.457E+01	1.457E+01	-6.481E+00	2.906E+00
RACHEL	4.452E+03	4.452E+03	7.212E+03	6.959E+03	1.388E+01	0.000E+00	-6.613E+00	2.818E+00
SAPHI R	2.388E+03	2.387E+03	8.448E+03	8.443E+03	1.457E+01	1.457E+01	-6.497E+00	2.887E+00
SADI R	4.507E+03	4.506E+03	1.093E+04	1.092E+04	1.457E+01	1.457E+01	-6.481E+00	2.906E+00
SLYPI G	1.330E+03	1.330E+03	6.561E+03	6.556E+03	1.519E+01	1.519E+01	0.000E+00	2.948E+00
SNOP	5.654E+03	5.655E+03	1.561E+04	1.560E+04	1.518E+01	1.518E+01	0.000E+00	2.947E+00
STA	5.389E+03	5.389E+03	1.157E+04	1.157E+04	1.412E+01	1.412E+01	-6.621E+00	2.842E+00
THERMOS	5.153E+03	5.389E+03	1.167E+04	1.167E+04	1.402E+01	1.402E+01	-6.603E+00	2.832E+00
THERMUTA	5.599E+03	5.604E+03	1.180E+04	1.180E+04	1.402E+01	1.402E+01	-6.603E+00	2.832E+00

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.ge2	1.020E+04	1.182E+03	1.273E+02	7.776E+00	9.251E+02	CASSANDR
cor3.ge2	1.220E+04	1.113E+03	1.259E+02	4.161E+00	8.252E+02	CORONA
hop3.ge2	9.229E+03	8.799E+02	2.105E+02	9.399E+00	5.432E+02	HOPE
iap3.ge2	1.962E+04	4.774E+02	1.292E+02	3.331E+00	2.727E+02	IAPC105
jim3.ge2	9.650E+03	7.861E+02	1.251E+02	3.753E+00	3.064E+02	JI MENA
mca3.ge2	9.874E+03	9.279E+02	1.297E+02	3.907E+00	5.556E+02	MONTECAR
rac3.ge2	6.309E+03	8.321E+02	7.109E+01	2.352E+00	3.826E+02	RACHEL
sap3.ge2	7.786E+03	5.381E+02	1.230E+02	4.065E+00	8.485E+01	SAPHI R
sdr3.ge2	9.869E+03	9.279E+02	1.297E+02	3.907E+00	5.556E+02	SADI R
sly3.ge2	6.056E+03	3.853E+02	1.203E+02	3.908E+00	1.468E+02	SLYPI G
sno3.ge2	1.471E+04	7.855E+02	1.114E+02	4.217E+00	5.316E+01	SNOP
sta3.ge2	1.044E+04	1.008E+03	1.166E+02	6.945E+00	7.141E+02	STA
the3.ge2	1.053E+04	1.094E+03	5.164E+01	3.055E+00	5.570E+02	THERMOS
thu3.ge2	1.066E+04	1.094E+03	5.164E+01	3.055E+00	5.570E+02	THERMUTA

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Z=32 Rho=1.0E-02 g/cc kT= 100. eV: CASE STUDY Ge3

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
CASSANDR	1.640E+03	1.640E+03	4.292E+03	4.292E+03	1.840E+01	0.000E+00-8.299E+00	1.451E+00	
CORONA	7.344E+02	7.428E+02	4.225E+03	4.191E+03	1.905E+01	0.000E+00-8.248E+00	1.476E+00	
HOPE	1.468E+03	1.468E+03	3.518E+03	3.517E+03	1.813E+01	1.844E+01-8.355E+00	1.440E+00	
I APC105	1.136E+03	1.128E+03	4.838E+03	4.993E+03	1.894E+01	0.000E+00-8.253E+00	1.472E+00	
J1 MENA	5.975E+02	5.993E+02	2.988E+03	2.987E+03	1.893E+01	0.000E+00-8.220E+00	1.472E+00	
MONTECAR	1.280E+03	1.280E+03	3.817E+03	3.820E+03	1.898E+01	1.898E+01-8.248E+00	1.476E+00	
OPAL	1.188E+03	1.188E+03	3.853E+03	3.655E+03	1.880E+01	1.880E+01-8.276E+00	1.466E+00	
RACHEL	1.345E+03	1.345E+03	2.659E+03	2.624E+03	1.845E+01	0.000E+00-8.322E+00	1.453E+00	
SAPHI R	4.843E+02	4.842E+02	1.913E+03	1.912E+03	2.001E+01	2.001E+01-8.200E+00	1.513E+00	
SADI R	1.279E+03	1.279E+03	3.813E+03	3.813E+03	1.898E+01	1.898E+01-8.248E+00	1.476E+00	
SLYPI G	4.647E+02	4.646E+02	3.628E+03	3.661E+03	1.914E+01	1.914E+01 0.000E+00	1.480E+00	
SNOP	6.049E+02	6.050E+02	4.981E+03	4.981E+03	1.948E+01	1.948E+01 0.000E+00	1.493E+00	
STA	1.312E+03	1.312E+03	3.921E+03	3.920E+03	1.893E+01	1.893E+01-8.313E+00	1.472E+00	
THERMOS	9.685E+02	1.199E+03	4.222E+03	4.224E+03	1.883E+01	1.883E+01-8.303E+00	1.468E+00	
THERMUTA	1.306E+03	1.349E+03	4.214E+03	4.216E+03	1.883E+01	1.883E+01-8.303E+00	1.468E+00	

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.ge3	4.069E+03	2.015E+02	2.061E+01	9.246E-01	1.410E+02	CASSANDR
cor3.ge3	4.032E+03	1.723E+02	2.070E+01	6.846E-01	1.184E+02	CORONA
hop3.ge3	3.328E+03	1.594E+02	2.994E+01	1.061E+00	1.061E+02	HOPE
iap3.ge3	4.697E+03	1.170E+02	2.416E+01	6.336E-01	6.658E+01	I APC105
jim3.ge3	2.843E+03	1.233E+02	2.136E+01	6.445E-01	5.863E+01	J1 MENA
mca3.ge3	3.627E+03	1.688E+02	2.146E+01	6.500E-01	1.121E+02	MONTECAR
opa3.ge3	3.712E+03	1.113E+02	2.914E+01	1.074E+00	6.661E+01	OPAL
rac3.ge3	2.498E+03	1.460E+02	1.540E+01	5.096E-01	6.718E+01	RACHEL
sap3.ge3	1.862E+03	2.702E+01	2.377E+01	7.860E-01	1.817E+01	SAPHI R
sdr3.ge3	3.623E+03	1.688E+02	2.146E+01	6.500E-01	1.121E+02	SADI R
sly3.ge3	3.513E+03	9.688E+01	1.835E+01	5.977E-01	4.286E+01	SLYPI G
sno3.ge3	4.856E+03	1.076E+02	1.805E+01	6.619E-01	4.800E+00	SNOP
sta3.ge3	3.717E+03	1.836E+02	2.021E+01	8.806E-01	1.185E+02	STA
the3.ge3	4.023E+03	1.900E+02	1.148E+01	6.040E-01	9.501E+01	THERMOS
thu3.ge3	4.014E+03	1.900E+02	1.148E+01	6.040E-01	9.501E+01	THERMUTA

WorkOp-III:94 Final

WorkOp-III:94 Final

Z=32 Rho=1.0E-02 g/cc kT= 300. eV: CASE STUDY Ge4

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
CASSANDR	3.662E+01	3.661E+01	7.040E+02	7.039E+02	2.660E+01	0.000E+00-9.579E+00	1.744E+00	
CORONA	1.450E+01	1.469E+01	7.262E+02	7.267E+02	2.690E+01	0.000E+00-9.551E+00	1.754E+00	
HOPE	1.451E+01	1.451E+01	7.082E+02	7.081E+02	2.644E+01	2.676E+01-9.601E+00	1.739E+00	
I APC105	1.217E+01	1.200E+01	1.521E+02	1.621E+02	2.692E+01	0.000E+00-9.551E+00	1.755E+00	
JIMENA	8.670E+00	8.687E+00	6.792E+02	6.810E+02	2.681E+01	0.000E+00-9.545E+00	1.751E+00	
MONTECAR	2.508E+01	2.509E+01	6.774E+02	6.775E+02	2.684E+01	2.684E+01-9.576E+00	1.732E+00	
OPAL	1.948E+01	1.948E+01	7.001E+02	7.212E+02	2.671E+01	2.671E+01-9.562E+00	1.748E+00	
RACHEL	2.760E+01	2.760E+01	5.176E+02	5.159E+02	2.653E+01	0.000E+00-9.586E+00	1.742E+00	
SAPHI R	8.488E+00	8.476E+00	4.422E+02	4.466E+02	2.743E+01	2.743E+01-9.533E+00	1.771E+00	
SLYPI G	1.210E+01	1.210E+01	7.420E+02	7.424E+02	2.706E+01	2.706E+01 0.000E+00	1.759E+00	
SNOP	3.736E+00	3.738E+00	8.531E+02	8.528E+02	2.696E+01	2.696E+01 0.000E+00	1.756E+00	
STA	2.646E+01	2.646E+01	7.109E+02	7.107E+02	2.681E+01	2.681E+01-9.586E+00	1.751E+00	
THERMOS	1.484E+01	2.243E+01	7.150E+02	7.175E+02	2.679E+01	2.679E+01-9.577E+00	1.751E+00	
THERMUTA	2.578E+01	2.759E+01	7.120E+02	7.144E+02	2.679E+01	2.679E+01-9.577E+00	1.751E+00	

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.ge4	6.900E+02	1.272E+01	1.262E+00	4.343E-02	5.997E+00	CASSANDR
cor3.ge4	7.112E+02	1.368E+01	1.191E+00	3.939E-02	5.337E+00	CORONA
hop3.ge4	6.966E+02	1.023E+01	1.354E+00	3.376E-02	2.434E+00	HOPE
iap3.ge4	1.401E+02	1.139E+01	1.548E+00	3.672E-02	3.666E+00	I APC105
jim3.ge4	6.672E+02	1.063E+01	1.364E+00	3.972E-02	3.422E+00	JIMENA
mca3.ge4	6.641E+02	1.189E+01	1.287E+00	3.855E-02	5.264E+00	MONTECAR
opa3.ge4	6.863E+02	1.210E+01	1.638E+00	4.732E-02	4.689E+00	OPAL
rac3.ge4	5.052E+02	1.101E+01	1.292E+00	4.271E-02	3.339E+00	RACHEL
sap3.ge4	4.363E+02	4.555E+00	1.348E+00	4.456E-02	1.182E+00	SAPHI R
sly3.ge4	7.321E+02	8.820E+00	1.114E+00	3.607E-02	2.787E+00	SLYPI G
sno3.ge4	8.438E+02	8.156E+00	1.077E+00	2.032E+01	2.202E+01	SNOP
sta3.ge4	6.966E+02	1.296E+01	1.234E+00	4.870E-02	5.046E+00	STA
the3.ge4	7.036E+02	1.295E+01	1.041E+00	4.032E-02	4.565E+00	THERMOS
thu3.ge4	7.004E+02	1.295E+01	1.041E+00	4.032E-02	4.565E+00	THERMUTA

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Z=32 Rho=1.0E-02 g/cc kT= 500. eV: CASE STUDY Ge5

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
CASSANDR	3.010E+00	3.010E+00	4.525E+01	4.524E+01	2.974E+01	0.000E+00	-1.023E+01	1.844E+00
CORONA	1.938E+00	1.951E+00	3.991E+01	3.987E+01	2.983E+01	0.000E+00	-1.021E+01	1.847E+00
HOPE	2.268E+00	2.269E+00	4.200E+01	4.312E+01	2.977E+01	2.987E+01	-1.024E+01	1.845E+00
I APC105	1.421E+00	1.424E+00	1.275E+01	1.174E+01	2.983E+01	0.000E+00	-1.022E+01	1.847E+00
JI MENA	1.350E+00	1.354E+00	4.256E+01	4.324E+01	2.984E+01	0.000E+00	-1.021E+01	1.848E+00
MONTECAR	2.331E+00	2.333E+00	3.753E+01	3.920E+01	2.984E+01	2.984E+01	-1.023E+01	1.834E+00
OPAL	1.960E+00	1.960E+00	4.136E+01	5.931E+01	2.982E+01	2.982E+01	-1.022E+01	1.847E+00
RACHEL	2.162E+00	2.178E+00	3.205E+01	3.158E+01	2.971E+01	0.000E+00	-1.023E+01	1.844E+00
SAPHI R	2.372E+00	2.362E+00	3.918E+01	4.167E+01	2.982E+01	2.982E+01	-1.022E+01	1.847E+00
SLYPI G	1.817E+00	1.817E+00	3.761E+01	3.763E+01	2.987E+01	2.987E+01	0.000E+00	1.848E+00
SNOP	6.968E-01	6.969E-01	4.370E+01	4.369E+01	2.986E+01	2.986E+01	0.000E+00	1.848E+00
STA	2.604E+00	2.604E+00	3.976E+01	3.958E+01	2.983E+01	2.983E+01	-1.023E+01	1.847E+00
THERMOS	1.911E+00	2.441E+00	4.729E+01	4.716E+01	2.982E+01	2.982E+01	-1.023E+01	1.847E+00
THERMUTA	2.332E+00	2.599E+00	4.746E+01	4.732E+01	2.982E+01	2.982E+01	-1.023E+01	1.847E+00

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cas3.ge5	4.253E+01	2.425E+00	2.942E-01	9.177E-03	1.201E+00	CASSANDR
cor3.ge5	3.711E+01	2.367E+00	2.692E-01	8.902E-03	1.162E+00	CORONA
hop3.ge5	3.923E+01	2.488E+00	2.868E-01	6.435E-03	1.330E+00	HOPE
iap3.ge5	1.029E+01	2.092E+00	3.556E-01	7.824E-03	9.906E-01	I APC105
jim3.ge5	4.019E+01	2.047E+00	3.261E-01	9.271E-03	7.290E-01	JI MENA
mca3.ge5	3.484E+01	2.230E+00	3.018E-01	8.965E-03	1.148E+00	MONTECAR
opa3.ge5	3.841E+01	2.581E+00	3.678E-01	9.622E-03	1.244E+00	OPAL
rac3.ge5	2.952E+01	2.026E+00	3.472E-01	1.147E-02	8.803E-01	RACHEL
sap3.ge5	3.595E+01	2.906E+00	2.960E-01	9.789E-03	9.221E-01	SAPHI R
sly3.ge5	3.554E+01	1.825E+00	2.515E-01	8.106E-03	8.842E-01	SLYPI G
sno3.ge5	4.186E+01	1.596E+00	2.449E-01	2.008E+01	2.203E+01	SNOP
sta3.ge5	3.712E+01	2.177E+00	2.915E-01	1.012E-02	1.155E+00	STA
the3.ge5	4.456E+01	2.332E+00	2.712E-01	9.440E-03	1.154E+00	THERMOS
thu3.ge5	4.472E+01	2.332E+00	2.712E-01	9.440E-03	1.154E+00	THERMUTA

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Z=32 Rho=1.0E-02 g/cc kT= 100. eV: CASE STUDY G_n3

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z*W	mu/ kT	OmegaP
HOPE	1.367E+03	1.458E+03	3.316E+03	3.662E+03	1.763E+01	1.862E+01	8.382E+00	1.420E+00
MONTECAR	2.211E+03	2.211E+03	7.113E+03	7.114E+03	1.700E+01	1.700E+01	8.364E+00	1.393E+00
SAPHI R	6.065E+02	6.065E+02	2.625E+03	2.625E+03	1.921E+01	1.921E+01	8.241E+00	1.482E+00
SLYPI G	2.085E+03	2.085E+03	1.070E+04	1.071E+04	1.200E+01	1.200E+01	0.000E+00	1.172E+00
SNOP	1.956E+03	1.957E+03	1.308E+04	1.308E+04	1.589E+01	1.589E+01	0.000E+00	1.348E+00
THERMOS	3.999E+02	6.342E+02	9.636E+03	9.639E+03	1.521E+01	1.521E+01	8.474E+00	1.319E+00
THERMUTA	1.068E+03	1.079E+03	9.696E+03	9.699E+03	1.521E+01	1.521E+01	8.474E+00	1.319E+00

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
hop3.gn3	3.126E+03	1.618E+02	2.839E+01	1.028E+00	1.055E+02	HOPE
mca3.gn3	6.626E+03	4.713E+02	1.551E+01	4.672E-01	1.971E+02	MONTECAR
sap3.gn3	2.539E+03	6.501E+01	2.118E+01	7.004E-01	2.767E+01	SAPHI R
sl y3.gn3	8.589E+03	2.107E+03	4.617E+00	1.481E-01	3.443E+02	SLYPI G
sno3.gn3	1.225E+04	8.179E+02	1.004E+01	3.681E-01	1.086E+01	SNOP
the3.gn3	8.398E+03	1.234E+03	6.940E+00	3.294E-01	4.737E+00	THERMOS
thu3.gn3	8.458E+03	1.234E+03	6.940E+00	3.294E-01	4.737E+00	THERMUTA

WorkOp-III:94 Final

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Z=32 Rho=1.0E-02 g/cc kT= 300. eV: CASE STUDY Gn4

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
HOPE	1.106E+02	1.210E+02	2.585E+03	2.660E+03	2.191E+01	2.151E+01	-9.786E+00	1.583E+00
MONTECAR	1.311E+02	1.306E+02	2.833E+03	2.853E+03	2.168E+01	2.168E+01	-9.767E+00	1.574E+00
SAPHI R	8.369E+01	8.362E+01	1.620E+03	1.639E+03	2.328E+01	2.328E+01	-9.697E+00	1.632E+00
SLYPI G	5.109E+02	5.109E+02	3.091E+03	3.097E+03	1.921E+01	1.921E+01	0.000E+00	1.482E+00
SNOP	1.045E+02	1.044E+02	3.419E+03	3.418E+03	2.176E+01	2.176E+01	0.000E+00	1.578E+00
THERMOS	8.901E+01	1.292E+02	2.372E+03	2.379E+03	2.148E+01	2.148E+01	-9.776E+00	1.568E+00
THERMUTA	1.079E+02	1.321E+02	2.369E+03	2.377E+03	2.148E+01	2.148E+01	-9.776E+00	1.568E+00

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
hop3.gn4	2.449E+03	1.344E+02	9.105E-01	2.665E-02	2.880E+01	HOPE
mca3.gn4	2.605E+03	2.265E+02	7.063E-01	2.090E-02	3.474E+01	MONTECAR
sap3.gn4	1.570E+03	4.916E+01	8.421E-01	2.784E-02	1.252E+01	SAPHI R
sly3.gn4	2.698E+03	3.922E+02	4.046E-01	1.294E-02	1.442E+02	SLYPI G
sno3.gn4	3.280E+03	1.384E+02	5.859E-01	2.019E+01	4.119E+01	SNOP
the3.gn4	2.198E+03	1.811E+02	5.769E-01	2.097E-02	1.295E+01	THERMOS
thu3.gn4	2.195E+03	1.811E+02	5.769E-01	2.097E-02	1.295E+01	THERMUTA

WorkOp-III:94 Final

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Z=32 Rho=1.0E-02 g/cc kT= 500. eV: CASE STUDY Gm5

CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z*W	mu/kT	OmegaP
HOPE	4.264E+01	4.999E+01	2.283E+03	2.391E+03	2.339E+01	2.266E+01	-1.048E+01	1.636E+00
MONTECAR	8.782E+01	8.764E+01	2.344E+03	2.728E+03	2.199E+01	2.199E+01	-1.052E+01	1.585E+00
SAPHI R	3.618E+00	3.607E+00	2.278E+02	2.309E+02	2.910E+01	2.910E+01	-1.024E+01	1.824E+00
SLYPI G	2.177E+02	2.177E+02	2.303E+03	2.306E+03	2.153E+01	2.153E+01	0.000E+00	1.569E+00
SNOP	8.727E+01	8.626E+01	2.961E+03	2.947E+03	2.240E+01	2.240E+01	0.000E+00	1.601E+00
THERMOS	4.363E+01	6.792E+01	2.060E+03	2.061E+03	2.217E+01	2.217E+01	-1.051E+01	1.593E+00
THERMUTA	6.990E+01	7.369E+01	2.040E+03	2.042E+03	2.217E+01	2.217E+01	-1.051E+01	1.593E+00

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
hop3.gn5	2.019E+03	2.634E+02	1.756E-01	4.812E-03	5.357E+00	HOPE
mca3.gn5	2.029E+03	3.140E+02	1.256E-01	3.661E-03	2.344E+01	MONTECAR
sap3.gn5	2.186E+02	8.897E+00	2.760E-01	9.127E-03	7.705E-01	SAPHI R
sl y3.gn5	1.942E+03	3.611E+02	9.564E-02	3.042E-03	4.277E+01	SLYPI G
sno3.gn5	2.585E+03	3.760E+02	1.088E-01	2.001E+01	4.957E+01	SNOP
the3.gn5	1.683E+03	3.776E+02	1.186E-01	3.899E-03	5.514E+00	THERMOS
thu3.gn5	1.664E+03	3.776E+02	1.186E-01	3.899E-03	5.514E+00	THERMUTA

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Z=79 Rho=1.0E-01 g/cc kT= 20. eV: CASE STUDY Au1

CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z*W	mu/kT	OmegaP
CORONA	2.729E+04	2.740E+04	6.021E+04	6.026E+04	7.174E+00	0.000E+00	-5.505E+00	1.739E+00
EOSOPA	1.198E+04	1.198E+04	4.934E+04	5.307E+04	6.808E+00	6.808E+00	0.000E+00	1.694E+00
JI MENA	1.227E+04	1.277E+04	4.046E+04	4.223E+04	7.091E+00	0.000E+00	-5.231E+00	1.729E+00
RACHEL	8.133E+03	8.134E+03	2.194E+04	2.155E+04	6.518E+00	0.000E+00	-5.726E+00	1.658E+00
SAPHI R	1.278E+04	1.278E+04	3.472E+04	3.467E+04	7.765E+00	7.764E+00	-5.430E+00	1.809E+00
SLYPI G	1.265E+04	1.265E+04	5.800E+04	5.795E+04	8.070E+00	8.069E+00	0.000E+00	1.844E+00
SNOP	1.318E+04	1.318E+04	3.516E+04	3.515E+04	8.358E+00	8.358E+00	0.000E+00	1.877E+00
STA	6.804E+03	6.804E+03	4.160E+04	4.113E+04	7.025E+00	7.025E+00	-5.650E+00	1.721E+00
THERMOS	4.705E+03	4.925E+03	3.177E+04	3.178E+04	6.921E+00	6.921E+00	-5.669E+00	1.708E+00
THERMUTA	7.357E+03	7.356E+03	3.235E+04	3.236E+04	6.921E+00	6.921E+00	-5.669E+00	1.708E+00

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE				
cor3.au1	4.701E+04	1.245E+04	7.454E+02	2.465E+01	1.051E+04	CORONA	---	---	---	---
eop3.au1	5.028E+04	2.475E+03	3.726E+02	1.147E+01	2.655E+03	EOSOPA	---	---	---	---
jim3.au1	3.495E+04	5.091E+03	4.197E+02	1.330E+01	2.953E+03	JI MENA	---	---	---	---
rac3.au1	2.087E+04	9.078E+02	1.556E+02	5.166E+00	3.569E+02	RACHEL	---	---	---	---
sap3.au1	3.373E+04	4.428E+02	5.404E+02	1.791E+01	4.391E+02	SAPHI R	---	---	---	---
sly3.au1	5.690E+04	5.740E+02	5.266E+02	1.714E+01	4.791E+02	SLYPI G	---	---	---	---
sno3.au1	3.466E+04	8.552E+01	4.154E+02	2.287E+01	1.403E+02	SNOP	---	---	---	---
sta3.au1	3.487E+04	6.420E+02	6.086E+03	2.456E+02	1.118E+03	STA	---	---	---	---
the3.au1	3.058E+04	1.108E+03	9.806E+01	8.125E+00	6.345E+02	THERMOS	---	---	---	---
thu3.au1	3.116E+04	1.108E+03	9.806E+01	8.125E+00	6.345E+02	THERMUTA	---	---	---	---

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Z=79 Rho=1.0E-01 g/cc kT= 100. eV: CASE STUDY Au2

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
CORONA	3.215E+03	3.270E+03	1.303E+04	1.299E+04	2.308E+01	0.000E+00	-6.751E+00	3.119E+00
EOSOPA	5.265E+03	5.266E+03	7.608E+03	7.700E+03	2.347E+01	2.347E+01	0.000E+00	3.146E+00
JI MENA	2.744E+03	2.584E+03	4.866E+03	4.755E+03	2.289E+01	0.000E+00	-6.681E+00	3.106E+00
RACHEL	4.114E+03	4.114E+03	6.022E+03	5.920E+03	2.145E+01	0.000E+00	-6.894E+00	3.007E+00
SAPHI R	4.134E+03	4.134E+03	9.820E+03	9.819E+03	2.254E+01	2.254E+01	-6.777E+00	3.083E+00
SLYPI G	1.140E+03	1.140E+03	5.055E+03	5.055E+03	2.435E+01	2.435E+01	0.000E+00	3.204E+00
SNOP	7.364E+03	7.365E+03	1.219E+04	1.219E+04	2.409E+01	2.410E+01	0.000E+00	3.187E+00
STA	3.690E+03	3.689E+03	8.535E+03	8.531E+03	2.248E+01	2.248E+01	-6.801E+00	3.078E+00
THERMOS	2.370E+03	3.161E+03	8.025E+03	8.033E+03	2.228E+01	2.228E+01	-6.857E+00	3.065E+00
THERMUTA	3.618E+03	3.625E+03	8.074E+03	8.082E+03	2.228E+01	2.228E+01	-6.857E+00	3.065E+00

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE					
cor3.au2	1.257E+04	4.025E+02	6.099E+01	2.017E+00	2.756E+02	CORONA	---	---	---	---	---
eop3.au2	6.905E+03	7.488E+02	5.297E+01	1.651E+00	2.874E+02	EOSOPA	---	---	---	---	---
jin3.au2	4.481E+03	3.361E+02	4.851E+01	1.533E+00	1.403E+02	JI MENA	---	---	---	---	---
rac3.au2	5.636E+03	3.609E+02	2.436E+01	8.057E-01	1.712E+02	RACHEL	---	---	---	---	---
sap3.au2	9.423E+03	3.517E+02	4.550E+01	1.505E+00	1.123E+01	SAPHI R	---	---	---	---	---
sly3.au2	4.909E+03	9.491E+01	5.099E+01	1.670E+00	8.303E+01	SLYPI G	---	---	---	---	---
sno3.au2	1.191E+04	2.352E+02	4.523E+01	1.669E+00	9.990E+01	SNOP	---	---	---	---	---
sta3.au2	8.095E+03	3.067E+02	1.326E+02	7.692E+00	3.228E+02	STA	---	---	---	---	---
the3.au2	7.478E+03	5.359E+02	1.884E+01	1.219E+00	3.168E+02	THERMOS	---	---	---	---	---
thu3.au2	7.527E+03	5.359E+02	1.884E+01	1.219E+00	3.168E+02	THERMUTA	---	---	---	---	---

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Z=79 Rho=1.0E-01 g/cc kT= 500. eV: CASE STUDY Au3

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
CORONA	4.301E+01	4.343E+01	1.011E+03	1.003E+03	5.207E+01	0.000E+00	-8.352E+00	4.685E+00
EOSOPA	1.792E+02	1.786E+02	8.129E+02	8.521E+02	5.189E+01	5.189E+01	0.000E+00	4.678E+00
JI MENA	7.475E+01	7.507E+01	9.279E+02	9.384E+02	5.192E+01	0.000E+00	-8.339E+00	4.678E+00
RACHEL	1.777E+02	1.777E+02	6.747E+02	6.743E+02	5.070E+01	0.000E+00	-8.414E+00	4.623E+00
SAPHI R	7.618E+01	7.606E+01	9.602E+02	9.608E+02	5.116E+01	5.116E+01	-8.371E+00	4.644E+00
SLYPI G	3.924E+01	3.923E+01	8.283E+02	8.333E+02	5.290E+01	5.290E+01	0.000E+00	4.722E+00
SNOP	6.999E+01	6.999E+01	1.162E+03	1.162E+03	5.297E+01	5.297E+01	0.000E+00	4.726E+00
STA	2.109E+02	2.109E+02	9.550E+02	9.548E+02	5.173E+01	5.173E+01	-8.395E+00	4.670E+00
THERMOS	1.483E+02	1.960E+02	9.606E+02	9.631E+02	5.182E+01	5.182E+01	-8.393E+00	4.674E+00
THERMUTA	1.996E+02	2.070E+02	9.605E+02	9.631E+02	5.182E+01	5.182E+01	-8.393E+00	4.674E+00

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE	
cor3.au3	9.966E+02	1.239E+01	2.051E+00	6.784E-02	9.645E+00	CORONA	---
eop3.au3	8.404E+02	1.019E+01	2.048E+00	6.372E-02	7.212E+00	EOSOPA	---
jin3.au3	9.167E+02	9.148E+00	2.081E+00	6.370E-02	5.723E+00	JI MENA	---
rac3.au3	6.612E+02	1.177E+01	1.613E+00	5.331E-02	7.823E+00	RACHEL	---
sap3.au3	9.535E+02	4.803E+00	1.897E+00	6.273E-02	1.950E+00	SAPHI R	---
sly3.au3	8.222E+02	4.255E+00	1.868E+00	6.113E-02	2.362E+00	SLYPI G	---
sno3.au3	1.157E+03	3.767E+00	1.779E+00	6.061E-02	6.173E-01	SNOP	---
sta3.au3	9.335E+02	1.856E+01	2.774E+00	1.284E-01	1.422E+01	STA	---
the3.au3	9.449E+02	1.674E+01	1.461E+00	6.456E-02	1.153E+01	THERMOS	---
thu3.au3	9.449E+02	1.674E+01	1.461E+00	6.456E-02	1.153E+01	THERMUTA	---

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Z=79 Rho=1.0E+01 g/cc kT= 20. eV: CASE STUDY Au4

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z*W	mu/ kT	OmegaP
CORONA	1.150E+05	1.216E+05	3.199E+05	3.123E+05	7.947E+00	0.000E+00	-6.404E-01	1.830E+01
EOSOPA	1.409E+04	1.409E+04	3.231E+04	2.579E+04	5.233E+00	5.233E+00	0.000E+00	1.485E+01
HAFPO	1.675E+04	1.685E+04	8.820E+04	8.843E+04	5.887E+00	7.335E+01	-1.322E+00	1.575E+01
RACHEL	8.551E+03	8.556E+03	2.289E+04	1.663E+04	4.712E+00	0.000E+00	-1.750E+00	1.409E+01
SAPHI R	1.672E+04	1.672E+04	5.598E+04	5.099E+04	4.279E+00	4.279E+00	-1.388E+00	1.343E+01
SLYPI G	1.878E+04	1.878E+04	6.647E+04	4.375E+04	7.705E+00	7.705E+00	0.000E+00	1.802E+01
SNOP	8.987E+03	8.981E+03	3.268E+04	2.715E+04	6.462E+00	6.462E+00	0.000E+00	1.651E+01
STA	3.835E+04	3.835E+04	4.808E+05	2.408E+05	6.530E+00	6.530E+00	-1.247E+00	1.659E+01
THERMOS	5.066E+03	5.056E+03	2.076E+04	1.965E+04	6.401E+00	6.401E+00	-1.340E+00	1.643E+01
THERMUTA	5.272E+03	5.260E+03	2.086E+04	1.975E+04	6.401E+00	6.401E+00	-1.340E+00	1.643E+01

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
cor3.au4	2.470E+02	2.897E+05	2.998E+04	9.915E+02	1.142E+05	CORONA
eop3.au4	5.658E+03	1.112E+04	1.956E+04	6.017E+02	1.275E+04	EOSOPA
haf3.au4	2.519E+04	5.956E+04	3.453E+03	2.360E+02	1.579E+04	HAFPO
rac3.au4	9.262E+03	1.098E+04	2.647E+03	8.792E+01	2.987E+03	RACHEL
sap3.au4	2.085E+04	2.510E+04	1.003E+04	3.334E+02	1.188E+04	SAPHI R
sly3.au4	2.200E+04	5.456E+03	3.902E+04	1.406E+03	1.091E+04	SLYPI G
sno3.au4	3.523E+02	1.220E+04	2.013E+04	1.108E+03	8.288E+03	SNOP
sta3.au4	1.359E+04	1.873E+04	4.485E+05	1.823E+04	3.683E+04	STA
the3.au4	1.338E+04	4.473E+03	2.872E+03	3.239E+02	4.328E+03	THERMOS
thu3.au4	1.347E+04	4.473E+03	2.872E+03	3.239E+02	4.328E+03	THERMUTA

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Z=79 Rho=1.0E+01 g/cc kT= 100. eV: CASE STUDY Au5

CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z*W	mu/kT	OmegaP
CORONA	1.385E+04	1.398E+04	1.662E+04	1.474E+04	1.633E+01	0.000E+00	-2.464E+00	2.624E+01
EOSOPA	8.420E+03	8.421E+03	8.311E+03	1.168E+04	1.381E+01	1.381E+01	0.000E+00	2.413E+01
RACHEL	4.406E+03	4.405E+03	7.369E+03	6.231E+03	1.561E+01	0.000E+00	-2.720E+00	2.565E+01
SAPHI R	1.095E+04	1.094E+04	1.935E+04	1.902E+04	1.511E+01	1.511E+01	-2.571E+00	2.524E+01
SLYPI G	4.037E+03	4.037E+03	6.667E+03	5.951E+03	2.007E+01	2.007E+01	0.000E+00	2.909E+01
SNOP	1.536E+04	1.536E+04	2.540E+04	2.527E+04	1.396E+01	1.396E+01	0.000E+00	2.426E+01
STA	7.404E+03	7.404E+03	1.440E+04	1.313E+04	1.699E+01	1.699E+01	-2.614E+00	2.676E+01
THERMOS	5.777E+03	5.831E+03	9.601E+03	9.548E+03	1.607E+01	1.607E+01	-2.678E+00	2.603E+01
THERMUTA	6.484E+03	6.496E+03	9.639E+03	9.586E+03	1.607E+01	1.607E+01	-2.678E+00	2.603E+01

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE			
cor3.au5	8.777E+03	4.287E+03	3.556E+03	1.176E+02	5.459E+03	CORONA	---	---	---
eop3.au5	4.311E+03	6.517E+03	1.113E+03	3.401E+01	4.546E+03	EOSOPA	---	---	---
rac3.au5	3.382E+03	3.629E+03	3.582E+02	1.185E+01	2.172E+03	RACHEL	---	---	---
sap3.au5	8.301E+03	9.586E+03	1.461E+03	4.838E+01	7.231E+03	SAPHI R	---	---	---
slly3.au5	2.466E+03	1.436E+03	2.766E+03	9.246E+01	2.274E+03	SLYPI G	---	---	---
sno3.au5	1.400E+04	1.047E+04	9.285E+02	3.427E+01	7.554E+03	SNOP	---	---	---
sta3.au5	3.676E+03	3.798E+03	6.927E+03	4.609E+02	5.902E+03	STA	---	---	---
the3.au5	2.888E+03	6.273E+03	4.389E+02	3.638E+01	4.171E+03	THERMOS	---	---	---
thu3.au5	2.926E+03	6.273E+03	4.389E+02	3.638E+01	4.171E+03	THERMUTA	---	---	---

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Z=79 Rho=1.0E+01 g/cc kT= 500. eV: CASE STUDY Au6

CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z*W	mu/kT	OmegaP
CORONA	7.930E+02	7.957E+02	2.090E+03	2.043E+03	3.785E+01	0.000E+00	-4.060E+00	3.995E+01
EOSOPA	8.616E+02	8.616E+02	1.285E+03	1.675E+03	3.922E+01	3.922E+01	0.000E+00	4.067E+01
HAFPO	5.020E+02	7.115E+02	2.169E+03	3.951E+03	3.797E+01	3.953E+01	-4.159E+00	4.001E+01
JI MENA	6.765E+02	6.796E+02	1.715E+03	1.723E+03	3.945E+01	0.000E+00	-3.904E+00	4.078E+01
RACHEL	7.463E+02	7.463E+02	1.327E+03	1.292E+03	3.779E+01	0.000E+00	-4.164E+00	3.991E+01
SAPHI R	6.088E+02	6.087E+02	1.620E+03	1.611E+03	4.335E+01	4.336E+01	-3.935E+00	4.275E+01
SLYPI G	5.826E+02	5.825E+02	1.475E+03	1.466E+03	4.319E+01	4.323E+01	0.000E+00	4.267E+01
SNOP	1.808E+03	1.808E+03	2.106E+04	2.100E+03	4.331E+01	4.331E+01	0.000E+00	4.273E+01
STA	8.689E+02	8.688E+02	1.957E+03	1.949E+03	3.866E+01	3.867E+01	-4.139E+00	4.037E+01
THERMOS	8.943E+02	8.942E+02	1.961E+03	1.958E+03	3.832E+01	3.831E+01	-4.147E+00	4.019E+01
THERMUTA	8.987E+02	8.984E+02	1.929E+03	1.927E+03	3.832E+01	3.831E+01	-4.147E+00	4.019E+01

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE				
cor3.au6	1.702E+03	2.850E+02	1.031E+02	3.411E+00	2.191E+02	CORONA	---	---	---	---
eop3.au6	1.319E+03	2.743E+02	8.984E+01	2.759E+00	2.621E+02	EOSOPA	---	---	---	---
haf3.au6	1.657E+03	4.217E+02	7.161E+01	4.537E+00	3.337E+02	HAFPO	---	---	---	---
jim3.au6	1.344E+03	2.759E+02	9.511E+01	2.847E+00	2.161E+02	JI MENA	---	---	---	---
rac3.au6	1.023E+03	2.629E+02	4.077E+01	1.348E+00	2.052E+02	RACHEL	---	---	---	---
sap3.au6	1.395E+03	1.076E+02	1.180E+02	3.901E+00	1.177E+02	SAPHI R	---	---	---	---
sly3.au6	1.222E+03	1.514E+02	1.016E+02	3.326E+00	1.637E+02	SLYPI G	---	---	---	---
sno3.au6	1.717E+03	2.910E+02	9.815E+01	3.344E+00	1.853E+01	SNOP	---	---	---	---
sta3.au6	1.497E+03	3.067E+02	1.524E+02	8.970E+00	2.994E+02	STA	---	---	---	---
the3.au6	1.488E+03	4.264E+02	4.415E+01	2.427E+00	3.406E+02	THERMOS	---	---	---	---
thu3.au6	1.457E+03	4.264E+02	4.415E+01	2.427E+00	3.406E+02	THERMUTA	---	---	---	---

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Z=31 Rho=2.6E-02 g/cc kT= 47. eV: CASE STUDY Mi1

CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z*W	mu/ kT	OmegaP
HOPE	4.227E+03	4.226E+03	8.506E+03	8.500E+03	1.016E+01	0.000E+00	-6.858E+00	1.762E+00
MONTECAR	2.830E+03	4.599E+03	9.140E+03	9.092E+03	1.030E+01	0.000E+00	-6.790E+00	1.774E+00
STA	4.661E+03	4.659E+03	9.318E+03	9.311E+03	1.039E+01	0.000E+00	-6.826E+00	1.782E+00
THERMUTA	5.262E+03	5.586E+03	9.580E+03	9.607E+03	1.111E+01	1.163E+01	-6.824E+00	1.597E+00

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
hop3.mi 1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.047E+02	HOPE
mca3.mi 1	8.160E+03	8.410E+02	1.370E+02	4.340E+00	7.300E+02	MONTECAR
sta3.mi 1	8.343E+03	8.237E+02	1.511E+02	9.897E+00	7.034E+02	STA
thu3.mi 1	8.514E+03	1.019E+03	7.521E+01	3.864E+00	8.407E+02	THERMUTA

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Z= 1 Rho=4.2E-09 g/cc kT= 3. eV: CASE STUDY Mi2

CODE	Kross	KrossW	Kplanck	KplanckW	Z*	Z*W	mu/ kT	OmegaP
HOPE	1.432E+01	1.432E+01	1.256E+03	1.228E+03	1.083E+00	0.000E+00	-1.667E+01	1.701E-03
HOPEnoMo	2.997E+00	2.997E+00	2.320E+02	1.884E+02	1.083E+00	0.000E+00	-1.667E+01	1.701E-03
LANL77	3.348E+00	3.360E+00	5.375E+02	7.889E+02	1.010E+00	0.000E+00	-1.659E+01	1.642E-03
OPAL	3.584E+00	3.584E+00	1.248E+03	1.788E+03	1.011E+00	0.000E+00	-1.659E+01	1.643E-03
STA	1.251E+02	1.251E+02	1.375E+03	1.374E+03	1.016E+00	0.000E+00	-1.706E+01	1.647E-03

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
hop3.mi 2	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.556E+00	HOPE
hoq3.mi 2	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.556E+00	HOPEnoMo
l773.mi 2	5.284E+02	8.156E+00	9.797E-01	2.765E-02	2.317E+00	LANL77
opa3.mi 2	1.000E-40	1.000E-40	1.000E-40	1.000E-40	1.000E-40	OPAL
sta3.mi 2	1.366E+03	7.775E+00	1.018E+00	6.254E-02	2.244E+00	STA

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Z= 1 Rho=1.2E-06 g/cc kT= 20. eV: CASE STUDY Mi3

CODE	Kross	KrossW	Kpl anck	Kpl anckW	Z*	Z* W	mu/ kT	OmegaP
HOPE	5.096E+00	5.096E+00	7.671E+01	7.676E+01	1.098E+00	0.000E+00	-1.372E+01	2.894E-02
HOPEnoMo	1.580E+00	1.580E+00	5.226E+01	5.278E+01	1.098E+00	0.000E+00	-1.372E+01	2.894E-02
LANL77	1.762E+00	1.758E+00	6.271E+00	6.692E+00	1.097E+00	0.000E+00	-1.370E+01	2.893E-02
OPAL	5.470E+00	5.470E+00	7.078E+01	1.149E+02	1.098E+00	0.000E+00	-1.370E+01	2.894E-02
STA	8.404E+00	8.403E+00	6.976E+01	6.942E+01	1.099E+00	0.000E+00	-1.381E+01	2.896E-02
THERMUTA	7.817E+00	8.224E+00	6.903E+01	6.861E+01	1.391E+00	1.014E+01	-1.371E+01	4.982E-03

FILE	Kpl BB	Kpl BF	Kpl FF	KroFF	KroCon	CODE
hop3.mi3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.121E+00	HOPE
hoq3.mi3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.121E+00	HOPEnoMo
l773.mi3	5.236E+00	1.091E+00	5.369E-01	1.294E-02	1.076E+00	LANL77
opa3.mi3	1.000E-40	1.000E-40	1.000E-40	1.000E-40	1.000E-40	OPAL
sta3.mi3	6.769E+01	1.239E+00	4.919E-01	1.226E-02	1.164E+00	STA
thu3.mi3	6.638E+01	1.768E+00	4.777E-01	1.284E-02	1.503E+00	THERMUTA

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