

ADF22: effective beam emission coefficients

Provides beam emission coefficients. These are stored as 1 and 2-dimensional scans from reference plasma conditions. Formatting conventions and variable storage are given below.

Utilising subroutines :

ADAS304

Formatted files to ADF22 specification :

Database Status	Date = March 17, 2003	Data type = bme files	Data root =/.../adas/adas/adf22/			
<i>Beam element</i>	<i>Plasma species</i>	<i>Library</i>	<i>Sub-library</i>	<i>Prefix</i>	<i>Comments</i>	<i>Quality</i>
h	b5,be4,c6,h1,he2,	bme93#h			Generated by ADAS310	medium
	n7,ne10,o8					
	h1,he2,li3,be4,b5,c6	bme97#h			Generated by ADAS310	high
	n7,o8,f9,ne10					
he	ar18, fe26	bme99#h			Generated by ADAS310	high
	h1,he2,li3,be4,b5,c6,	bme99#he_fast	nm<wvlen>	m<i>f#he	Generated by ADAS313	high
	n7,o8,f9,ne10					
	h1,he2,li3,be4,b5,c6,	bme99#he_slow	nm<wvlen>	m<i>f#he	Generated by ADAS313	high
	n7,o8,f9,ne10					

- Notes:
1. Hydrogen donor data is for Balmer alpha only.
 2. Helium donor data is distinguished by spectrum line <wvlen> in nanometres and by driving metastable indexed by <i>.
 3. 'Fast' helium data is based on a beam reference energy at 50 keV/amu. 'Slow' helium data is based on a beam reference energy of 10 keV/amu.
 4. A special data collection for hydrogen-beams from H⁻ sources based on a beam reference energy of 140 keV can be made available.

Data lines :

Format:

ZT, SVREF, SPEC, DATE, CODE
 NEB, NDT, TREF
 (EB(IEB), IEB=1,NEB)
 (DT(IDT), IDT=1,NDT)
 for IDT = 1 to NDT
 (SV(IEB,IDT), IEB=1,NEB)
 repeat
 TT, EREF, DREF
 TT(ITT), ITT=1,NTT)
 SVT(ITT), ITT=1,NTT)

variable identification :

<i>name</i>	<i>meaning</i>
ZT	charge of target ion
SVREF	beam emission coefft. at reference beam energy, target density and temperature
SPEC	specification of target (text) (eg. BE)
DATE	date of calculation
CODE	name of source computer code for calculation
NEB	number of beam energies
NDT	number of target densities
TREF	reference target temperature (eV)
EB()	beam energies (eV/amu)
DT()	target densities (cm-3)
SV(),	beam emission coefficient (cm ³ s ⁻¹) at reference temp. 1st parameter - beam energy

2nd parameter - target density

NTT	number of target temperatures
EREF	reference beam energy (eV/amu)
DREF	reference target density (cm-3)
TT()	target temperatures (eV)
SVT()	beam emission coefficient (cm3 s-1) at reference beam energy and target density

Table B22c - example.

10 /ECREF=3.581E-10 /SPEC=NE /DATE=19/03/97 /CODE=ADAS311									

25	25	/TREF=2.000E+03							

5.000E+03	1.000E+04	1.500E+04	2.000E+04	2.500E+04	3.000E+04	3.500E+04	4.000E+04	4.500E+04	5.000E+04
8.500E+04	9.000E+04	9.500E+04	1.000E+05	1.050E+05	1.100E+05	1.150E+05	1.200E+05	1.250E+05	1.300E+05
1.000E+12	2.000E+12	3.000E+12	5.000E+12	6.000E+12	7.000E+12	8.000E+12	9.000E+12	1.000E+13	2.000E+13
1.000E+13	2.000E+13	3.000E+13	5.000E+13	6.000E+13	7.000E+13	8.000E+13	9.000E+13	1.000E+14	2.000E+14
1.000E+14	2.000E+14	3.000E+14	5.000E+14	6.000E+14	7.000E+14	8.000E+14	9.000E+14	1.000E+15	2.000E+15

1.406E-09	1.380E-09	1.475E-09	1.559E-09	1.597E-09	1.607E-09	1.614E-09	1.649E-09	1.712E-09	1.797E-09
3.301E-09	3.565E-09	3.846E-09	4.128E-09	4.398E-09	4.663E-09	4.934E-09	5.210E-09	5.478E-09	5.746E-09
1.220E-09	1.161E-09	1.260E-09	1.351E-09	1.394E-09	1.408E-09	1.419E-09	1.454E-09	1.514E-09	1.592E-09
2.959E-09	3.196E-09	3.448E-09	3.700E-09	3.942E-09	4.179E-09	4.421E-09	4.668E-09	4.907E-09	5.146E-09
1.085E-09	1.008E-09	1.106E-09	1.199E-09	1.245E-09	1.261E-09	1.274E-09	1.308E-09	1.364E-09	1.437E-09
2.692E-09	2.907E-09	3.136E-09	3.365E-09	3.584E-09	3.799E-09	4.018E-09	4.242E-09	4.458E-09	4.674E-09
8.926E-10	8.017E-10	8.941E-10	9.840E-10	1.031E-09	1.049E-09	1.064E-09	1.097E-09	1.147E-09	1.210E-09
2.292E-09	2.474E-09	2.667E-09	2.861E-09	3.047E-09	3.229E-09	3.415E-09	3.603E-09	3.786E-09	3.969E-09
8.211E-10	7.284E-10	8.171E-10	9.045E-10	9.513E-10	9.698E-10	9.848E-10	1.016E-09	1.064E-09	1.123E-09
2.137E-09	2.307E-09	2.486E-09	2.666E-09	2.839E-09	3.008E-09	3.181E-09	3.357E-09	3.527E-09	3.700E-09
7.607E-10	6.678E-10	7.528E-10	8.374E-10	8.834E-10	9.020E-10	9.172E-10	9.477E-10	9.931E-10	1.049E-09
2.003E-09	2.162E-09	2.330E-09	2.498E-09	2.660E-09	2.818E-09	2.980E-09	3.144E-09	3.303E-09	3.462E-09
7.090E-10	6.169E-10	6.983E-10	7.799E-10	8.250E-10	8.436E-10	8.589E-10	8.884E-10	9.318E-10	9.852E-10
1.886E-09	2.036E-09	2.194E-09	2.352E-09	2.504E-09	2.653E-09	2.805E-09	2.960E-09	3.109E-09	3.258E-09

6.641E-10 5.734E-10 6.514E-10 7.302E-10 7.742E-10 7.937E-10 8.079E-10 8.366E-10
8.781E-10 9.289E-10 1.001E-09 1.096E-09 1.219E-09 1.361E-09 1.511E-09 1.649E-09
1.783E-09 1.924E-09 2.074E-09 2.233E-09 2.366E-09 2.507E-09 2.651E-09 2.797E-09
2.939E-09
6.248E-10 5.359E-10 6.106E-10 6.867E-10 7.296E-10 7.479E-10 7.630E-10 7.908E-10
8.307E-10 8.792E-10 9.477E-10 1.041E-09 1.156E-09 1.291E-09 1.434E-09 1.565E-09
1.692E-09 1.826E-09 1.967E-09 2.109E-09 2.245E-09 2.379E-09 2.515E-09 2.654E-09
2.787E-09
3.967E-10 3.273E-10 4.346E-10 4.678E-10 4.836E-10 4.970E-10 5.185E-10
5.474E-10 5.816E-10 6.290E-10 6.934E-10 7.728E-10 8.655E-10 9.630E-10 1.052E-09
1.138E-09 1.228E-09 1.323E-09 1.418E-09 1.510E-09 1.600E-09 1.692E-09 1.786E-09
1.877E-09
2.942E-10 2.382E-10 2.778E-10 3.210E-10 3.479E-10 3.616E-10 3.733E-10 3.912E-10
4.144E-10 4.415E-10 4.784E-10 5.286E-10 5.903E-10 6.621E-10 7.375E-10 8.067E-10
8.728E-10 9.419E-10 1.015E-09 1.088E-09 1.159E-09 1.229E-09 1.301E-09 1.373E-09
1.444E-09
2.844E-10 3.041E-10 3.306E-10 2.133E-10 2.330E-10 2.439E-10 2.534E-10 2.672E-10
6.095E-10 6.583E-10 7.097E-10 7.615E-10 8.118E-10 8.617E-10 9.128E-10 9.647E-10
1.015E-09
1.710E-10 1.342E-10 1.571E-10 1.833E-10 2.007E-10 2.106E-10 2.194E-10 2.318E-10
2.473E-10 2.648E-10 2.882E-10 3.196E-10 3.581E-10 4.026E-10 4.493E-10 4.923E-10
5.334E-10 5.763E-10 6.215E-10 6.671E-10 7.114E-10 7.555E-10 8.006E-10 8.466E-10
8.915E-10
1.511E-10 1.177E-10 1.377E-10 1.609E-10 1.765E-10 1.857E-10 1.938E-10 2.052E-10
2.192E-10 2.351E-10 2.561E-10 2.843E-10 3.187E-10 3.585E-10 4.003E-10 4.388E-10
4.756E-10 5.140E-10 5.545E-10 5.954E-10 6.352E-10 6.748E-10 7.154E-10 7.567E-10
7.972E-10
1.357E-10 1.049E-10 1.227E-10 1.435E-10 1.577E-10 1.662E-10 1.738E-10 1.843E-10
1.972E-10 2.118E-10 2.309E-10 2.565E-10 2.877E-10 3.237E-10 3.616E-10 3.966E-10
4.300E-10 4.649E-10 5.016E-10 5.388E-10 5.750E-10 6.111E-10 6.480E-10 6.857E-10
7.227E-10
1.234E-10 9.480E-11 1.107E-10 1.296E-10 1.427E-10 1.506E-10 1.577E-10 1.675E-10
1.795E-10 1.929E-10 2.105E-10 2.339E-10 2.626E-10 2.956E-10 3.303E-10 3.623E-10
3.930E-10 4.250E-10 4.587E-10 4.928E-10 5.261E-10 5.593E-10 5.933E-10 6.279E-10
6.621E-10
1.133E-10 8.651E-11 1.009E-10 1.182E-10 1.303E-10 1.377E-10 1.445E-10 1.536E-10
1.648E-10 1.773E-10 1.936E-10 2.153E-10 2.417E-10 2.722E-10 3.043E-10 3.339E-10
3.623E-10 3.919E-10 4.231E-10 4.546E-10 4.855E-10 5.162E-10 5.478E-10 5.799E-10
6.117E-10
6.434E-11 4.679E-11 5.403E-11 6.344E-11 7.037E-11 7.505E-11 7.944E-11 8.519E-11
9.206E-11 9.963E-11 1.093E-10 1.219E-10 1.373E-10 1.549E-10 1.735E-10 1.908E-10
2.074E-10 2.248E-10 2.431E-10 2.617E-10 2.799E-10 2.981E-10 3.169E-10 3.361E-10
3.552E-10
4.590E-11 3.232E-11 3.707E-11 4.353E-11 4.842E-11 5.186E-11 5.513E-11 5.937E-11
6.439E-11 6.991E-11 7.683E-11 8.590E-11 9.686E-11 1.094E-10 1.226E-10 1.350E-10
1.469E-10 1.594E-10 1.725E-10 1.858E-10 1.989E-10 2.121E-10 2.256E-10 2.395E-10
2.533E-10
2.964E-11 2.006E-11 2.283E-11 2.680E-11 2.989E-11 3.215E-11 3.432E-11 3.711E-11
4.040E-11 4.400E-11 4.847E-11 5.428E-11 6.128E-11 6.930E-11 7.776E-11 8.569E-11
9.336E-11 1.014E-10 1.098E-10 1.184E-10 1.269E-10 1.354E-10 1.441E-10 1.531E-10
1.621E-10
2.526E-11 1.687E-11 1.916E-11 2.249E-11 2.510E-11 2.703E-11 2.889E-11 3.127E-11
3.408E-11 3.715E-11 4.095E-11 4.588E-11 5.182E-11 5.862E-11 6.579E-11 7.253E-11
7.905E-11 8.585E-11 9.302E-11 1.003E-10 1.075E-10 1.148E-10 1.222E-10 1.299E-10
1.375E-10
2.203E-11 1.456E-11 1.650E-11 1.938E-11 2.163E-11 2.332E-11 2.494E-11 2.702E-11
2.948E-11 3.215E-11 3.546E-11 3.975E-11 4.491E-11 5.080E-11 5.704E-11 6.289E-11
6.856E-11 7.448E-11 8.071E-11 8.706E-11 9.333E-11 9.964E-11 1.061E-10 1.128E-10
1.195E-10

1.954E-11 1.281E-11 1.450E-11 1.702E-11 1.901E-11 2.050E-11 2.195E-11 2.379E-11
2.597E-11 2.835E-11 3.127E-11 3.506E-11 3.962E-11 4.484E-11 5.034E-11 5.552E-11
6.054E-11 6.577E-11 7.129E-11 7.691E-11 8.246E-11 8.805E-11 9.379E-11 9.969E-11
1.056E-10
1.757E-11 1.144E-11 1.293E-11 1.518E-11 1.696E-11 1.830E-11 1.960E-11 2.126E-11
2.322E-11 2.535E-11 2.797E-11 3.137E-11 3.546E-11 4.013E-11 4.506E-11 4.970E-11
5.420E-11 5.890E-11 6.385E-11 6.889E-11 7.387E-11 7.888E-11 8.404E-11 8.933E-11
9.465E-11
1.596E-11 1.033E-11 1.166E-11 1.369E-11 1.530E-11 1.652E-11 1.770E-11 1.921E-11
2.099E-11 2.292E-11 2.530E-11 2.838E-11 3.208E-11 3.631E-11 4.078E-11 4.499E-11
4.907E-11 5.333E-11 5.781E-11 6.238E-11 6.690E-11 7.145E-11 7.612E-11 8.092E-11
8.576E-11

20 /BREF=6.500E+04 /NREF=6.000E+13

1.000E+02 2.000E+02 3.000E+02 5.000E+02 6.000E+02 7.000E+02 8.000E+02 8.966E+02
1.000E+03 2.000E+03 3.000E+03 5.000E+03 6.000E+03 7.000E+03 8.000E+03 8.966E+03
1.000E+04 2.000E+04 3.000E+04 5.000E+04
4.960E-10 5.030E-10 4.907E-10 4.611E-10 4.481E-10 4.366E-10 4.265E-10 4.177E-10
4.092E-10 3.581E-10 3.322E-10 3.030E-10 2.936E-10 2.862E-10 2.802E-10 2.753E-10
2.709E-10 2.500E-10 2.440E-10 2.447E-10