

ADF21: effective beam stopping coefficients

Provides total beam stopping rate 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 ADF21 specification :

Database Status	Date = March 17, 2003	Data type = bms files	Data root =/.../adas/adas/adf21/		
<i>Beam element</i>	<i>Plasma species</i>	<i>Library</i>	<i>Sub-library</i>	<i>Comments</i>	<i>Quality</i>
h	b5,be4,c6,h1,he2, n7,ne10,o8	bms93#h		Generated by ADAS310	medium
	h1,he2,li3,be4,b5,c6, n7,o8,f9,ne10	bms97#h		Generated by ADAS310	high
	ar18, fe26	bms99#h		Generated by ADAS310	medium
	he	b5,be4,c6,h1,he2, n7,ne10,o8	bms93#he		See note 1.
h1,he2,li3,be4,b5,c6, n7,o8,f9,ne10		bms99#he_fast	gcr<i><j>	Generated by ADAS311	high
h1,he2,li3,be4,b5,c6, n7,o8,f9,ne10		bms99#he_slow	gcr<i><j>	Generated by ADAS311	high

- Notes:
1. The helium stopping data is valid at zero density only. The dataset contains placeholders for insertion of finite density stopping data in the future.
 2. Generalised collisional radiative coefficients with $1s^2\ ^1S$, $1s2s\ ^1S$, $1s2s\ ^3S$ as metastables. <i><j> corresponds to the effective rate coefficient $j \rightarrow i$.
 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 :

```
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)
```

Format:

variable identification :

<i>name</i>	<i>meaning</i>
ZT	charge of target ion
SVREF	beam stopping 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 stopping 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 stopping coefficient (cm3 s-1) at reference beam energy and target density

Table B21c - example.

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  9 /SVREF=1.798E-07 /SPEC=F /DATE=19/03/97 /CODE=ADAS310
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 25  25 /TREF=2.000E+03
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4.500E+04 5.000E+04 5.500E+04 6.000E+04 6.500E+04 7.000E+04 7.500E+04 8.000E+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
1.000E+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 3.000E+13 5.000E+13 6.000E+13 7.000E+13 8.000E+13 9.000E+13
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
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