ADF24: state selective charge transfer cross-sections

Provides state selective charge exchange cross-sections for partially stripped receivers. Cross-sections are stored in indexed lists with a detailed description in the comments section at the tail of the data set.

Utilising subroutines :

ADAS509

Formatted files to ADF24 specification :

Database Status Date = March 17, 2003 Data type = scx files Data root = /.../adas/adas/adf24/

Donor	*Receiver/member*	*Prefix*	*Library*	*Comments*	*Quality*
H0	c1,c2,c3,c4,c5,c6	cfm	scx#h0	Maggi assessment	medium

Notes:

Data lines :	*Format:*
NBSEL	i5
for IBLK = 1 to NBSEL	
SYMD, IZD,IREFD, SYMR, IZR, IREFR, NEN,CFSTAT, CTYPE,ALPH0,ISEL	a2,1x,i2,1x,a3,1x,a2,1x,i2,1x,a3,i4,5x,a10,6x,a2, 7x,d10.2,5x,i5
(EEA(IE), IE=1,NEN)	6d10.2
(SCX(IE), IE=1,NEN)	6d10.2
repeat	

variable identification :

name	*meaning*
NBSEL	number of cross-sections indexed
SYMD	chemical symbol of donor
IZD	charge of donor
IREFD	non-mandatory index of donor level in standard energy level list (usually in brackets)
SYMR	chemical symbol of receiver
IZR	charge of receiver
IREFR	non-mandatory index of receiver level in standard energy level list (usually in brackets)
NEN	number of energies at which cross-section is tabulated
CFSTAT	receiving level quantum number specification
CTYPE	cross-section type for determining low energy extrapolation (set to 1 - not implemented)
ALPH0	extrapolation parameter (set to 0.00d+00 - not implemented)
ISEL	index number of cross-section block
EEA()	energies (eV/amu)
SCX()	cross-sections (cm2)

Table B24c - example.

```
    2
H + 0 (1)/C + 1 (1)  24/FST= 2p2 (3P) /TYPE= 1/ALPH0=  0.00E+00/ISEL=    1
 2.000D+00 5.000D+00 1.000D+01 2.000D+01 3.000D+01 5.000D+01
 7.000D+01 1.000D+02 2.000D+02 3.000D+02 4.000D+02 5.000D+02
 7.000D+02 1.000D+03 2.000D+03 4.000D+03 7.000D+03 1.000D+04
 2.000D+04 4.000D+04 7.000D+04 1.000D+05 2.000D+05 3.300D+05
 5.000D-22 3.000D-21 1.500D-20 1.000D-19 4.000D-19 1.500D-18
 4.000D-18 1.000D-17 5.000D-17 1.000D-16 2.000D-16 3.000D-16
 5.000D-16 7.000D-16 8.290D-16 8.060D-16 7.220D-16 6.100D-16
 3.910D-16 1.920D-16 6.940D-17 2.810D-17 3.670D-18 5.630D-19
H + 0 (1)/C + 1 (1)  24/FST= Total    /TYPE= 1/ALPH0=  0.00E+00/ISEL=    2
 2.000D+00 5.000D+00 1.000D+01 2.000D+01 3.000D+01 5.000D+01
 7.000D+01 1.000D+02 2.000D+02 3.000D+02 4.000D+02 5.000D+02
 7.000D+02 1.000D+03 2.000D+03 4.000D+03 7.000D+03 1.000D+04
 2.000D+04 4.000D+04 7.000D+04 1.000D+05 2.000D+05 3.300D+05
```

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 5.000D-22 3.000D-21 1.500D-20 1.000D-19 4.000D-19 1.500D-18
 4.000D-18 1.000D-17 5.000D-17 1.000D-16 2.000D-16 3.000D-16
 5.000D-16 7.000D-16 8.290D-16 8.060D-16 7.220D-16 6.100D-16
 3.910D-16 1.920D-16 6.940D-17 2.810D-17 3.670D-18 5.630D-19
C-----------------------------------------------------------------------
C  ISEL   DONOR STATE  RECVR. STATE  FINAL STATE  TYPE
C  ----   -----------  ------------  -----------  ----
C    1     H + 0 (1)    C + 1 (1)    2s2 2p2 (3P)   1
C    2     H + 0 (1)    C + 1 (1)      Total        1
C
C
C  NOTES:
C  ------
C  1.Preferred curve compiled from the following data:
C    * R.A. Phaneuf et al., Nucl. Fusion 75 (1992) Vol 2 (Supplement
C       of Atomic and Plasma-Material Interaction Data for Fusion).
C      (this is from the original compilation ORNL-6090, 1987).
C    * P.C. Stancil et al., submitted to Astrophys. J., Nov. 1997.
C
C  2. Total capture assumed into ground state!!
C  3. Cross section values below 20 eV/amu extrapolated at constant
C     slope down to to 2 eV/amu (=threshold for this endothermic reaction).
C
C
C   Producer:        C.F. Maggi
C   Date:            08/12/97
C
C-----------------------------------------------------------------------
```