ADF41: driver data-sets for offline ADAS8#1 calculations

Provides driver datasets for offline ADAS8#1baseline data production. Note that these datasets are designed only for offline calculations. The procedure for utilisation is as follows: Create a new element working directory for ADAS8#1 calculations. Copy the ADF41 files for a selected range of ions for the element into the working directory. The member name structure must be retained. Copy ADF34 drivers for the same selected set of ions into the working directory. Note that the ADF34 driver names should be altered to the form '<element symbol>_<ion charge number>_adf34.dat'. Copy ADF42 drivers for the same selected set of ions into the working directory. Note that the ADF42 driver names should be altered to the form '<element symbol>_<ion charge number>_pec_drv.dat'. The calculation is initiated by the PERL script in the */.../adas/offline_adas/perl/adas8xx/* directory. The sequence of ions is worked through successively. Output data sets are returned to the working directory. For archiving, a copy PERL script in the */.../adas/offline_adas/perl/adas8xx/* directory allows final placement of the results.

Utilising subroutines :

　　ADAS8*1

Formatted files to ADF41 specification :

Database Status	Date = March 17 , 2003	Data type = ADAS801drivers	Data root = /.../adas/adas/adf41/
class library	*sub-libraries*	*Members*	*Comments*
	incomplete - in course of being filled		
/iso_nucl	/argon	ar_<ion charge>_inst.dat	element and plasma parameters
	/argon	ar_<ion charge>_pp.dat	Cowan/O'Mullane control parameters

inst driver *data lines :*	*Format:*
'z0',IZ0	a2,1x,i2
'zi',IZ	a2,1x,i2
'parity-1',IP1	a7,i2
'parity-2',IP2	a7,i2
'E2',IE2	a2,i2
'M1',IM1	a2,i2
'scale',IS1, IS2, IS3, IS4, IS5	a5,5i3

| | 'temperature',MAXT | a11,i3 |
| | (TEA(I),I=1,MAXT) | 8e12.5 |

variable identification

name	meaning
IZ0	nuclear charge of element
IZ	ion charge
IP1	number of configurations of 1st parity (Note the 1st parity must be that of the ground configuration)
IP2	number of configurations of 2nd parity (Note IP1 and IP2 must match the associated ADF34 file)
IE2	'0' => exclude E2 radiation; '3' => include E2 radiation
IM1	'0' => exclude M1 radiation; '3' => include M1 radiation
IS1	scaling parameter (%) applied to the ?? matrix elements
IS2	scaling parameter (%) applied to the ?? matrix elements
IS3	scaling parameter (%) applied to the ?? matrix elements
IS4	scaling parameter (%) applied to the ?? matrix elements
IS5	scaling parameter (%) applied to the ?? matrix elements
MAXT	number of temperatures (Note must be 25 in present coding)
TEA(I)	electron temperatures (K)

Table B41a – *inst* element and plasma driver parameters for W^{+7} calculation

```
z0 74
zi 7
parity-1 3
parity-2 6
E2 3
M1 3
scale 93 99 93 93 93
temperature 25
 2.00000E+02 5.00000E+02 1.00000E+03 2.00000E+03 5.00000E+03 1.00000E+04 2.00000E+04 5.00000E+04
 1.00000E+05 2.00000E+05 5.00000E+05 1.00000E+06 2.00000E+06 2.20000E+06 2.20000E+06 2.20000E+06
 2.20000E+06 2.20000E+06 2.20000E+06 2.20000E+06 2.20000E+06 2.20000E+06 2.20000E+06 2.20000E+06
 2.20000E+06
```

pp driver *data lines :*		*Format:*
INDEX		1i1
CNAME		1a20
CDATE		1a8
ICMT		1i12
for I=1, ICMT do		
C80		1a80
repeat		
&FILES		1a80
&OPTIONS		1a80
(ITA(I),I=1,25)		25i3

variable identification

name	meaning
INDEX	
CNAME	producer's name
CDATE	production date
ICMT	number of comment lines following
C80	arbitrary comment line
&FILES	namelist (files)
	ifgfile =input ADF34 driver file name – local directory pathway
	outfile = output ADF04 file name – local directory pathway
&OPTIONS	namelist (options)
	ip = ionisation potential (cm-1)
	coupling = 'LS' => ls coupling; 'IC' => intermediate coupling
	aval = 'YES' => evaluate A-values; 'NO' => do not evaluate A-values

isonuclear	= 'YES' => ;'NO' =>
lweight	= 'YES' => ;'NO' =>
comments	= '1' => level 1 comment output ; '2' => level 2 comment output (to ADF04 file)
numtemp	= number of temperatures for collisional rate coefficient tabulation (maximum 14)
ITA(I)	temperature index selector from standard Cowan set of 25 (see associated *inst* driver .

Table B41b – *pp* Cowan/O'Mullane driver control parameters for W^{+7} calculation

```
1
Allan Whiteford
15/12/79
           1
C    Comments are for losers!
 &FILES ifgfile = './ifg#w_7_adf34.dat' , outfile = './w_7_adf04.dat' &END
 &OPTIONS  ip =   1134988.8, coupling = 'IC' ,  aval = 'YES' ,  isonuclear = 'NO', lweight = 'NO' ,  comments = 2,  numtemp = 14, &END
   1  2  3  4  5  6  7  8  9 10 11 12 13 14
```