

ADF11: iso-nuclear master files

Isonuclear master file data. Formatting conventions and variable storage are given below.

Utilising subroutines :

ADAS405 ADAS406

Formatted files to ADF11 specification :

Database Status	Date = March 17, 2003	Data type = isonuclear master files	Data root = /.../adas/adas/adf11/		
<i>Element</i>	<i>Classes</i>	<i>Datasets</i>	<i>Comments</i>	<i>Resolution</i>	<i>Quality</i>
Hydrogen	acd, scd, ccd, prb, prc, plt, pls	/<class>89/<class>89#h.dat	JET base line	unresolved	low
Hydrogen	acd, scd, qcd, xcd, prb, plt	/<class>93r/<class>93r_h.dat	ADAS208, c-r	resolved	high
Hydrogen	acd, scd, ccd, prb, plt, prc	/<class>96/<class>96_h.dat	ADAS208, c-r	unresolved	high
Helium	acd, scd	/<class>74/<class>74_he.dat	Summers, c-r	unresolved	medium
Helium	acd, scd	/<class>85/<class>85_he.dat	Arnaud & Rothenflug *HPS c-r	unresolved	medium
Helium	acd, scd,ccd,prb,prc,plt,pls	/<class>89/<class>89_he.dat	JET base line	unresolved	low
Helium	acd, scd,qcd,xcd,prb,plt	/<class>93r/<class>93r_he.dat	ADAS208, c-r	resolved	high
Helium	acd, scd, ccd, prb, plt, prc	/<class>96/<class>96_he.dat	ADAS208, c-r	unresolved	high
Helium	acd, scd, ccd, qcd, xcd, prb, plt, prc	/<class>96/<class>96_he.dat	ADAS208, c-r	resolved	high
Lithium	acd, scd,ccd,prb,prc,plt,pls	/<class>89/<class>89_li.dat	JET base line	unresolved	low
Lithium	acd, scd, ccd, prb, plt, prc	/<class>96/<class>96_li.dat	ADAS208, c-r	unresolved	high
Lithium	acd, scd, ccd, qcd, xcd, prb, plt, prc	/<class>96/<class>96_li.dat	ADAS208, c-r	resolved	high
Beryllium	acd, scd,ccd,prb,prc,plt,pls	/<class>89/<class>89_be.dat	JET base line	unresolved	low
Beryllium	acd, scd,qcd,xcd,prb,plt	/<class>93r/<class>93r_be.dat	ADAS208, c-r	resolved	high

Boron	acd, scd			Summers, c-r	unresolved	medium
Boron	acd, scd, ccd, prb, prc, plt, pls	/<class>74/<class>74_b.dat /<class>89/<class>89_b.dat		JET base line	unresolved	low
Carbon	acd, scd	/<class>74/<class>74_c.dat		Summers, c-r	unresolved	medium
Carbon	acd, scd	/<class>85/<class>85_c.dat		Arnaud & Rothenflug *HPS c-r	unresolved	medium
Carbon	acd, scd, ccd, prb, prc, plt, pls	/<class>89/<class>89_c.dat		JET base line	unresolved	low
Carbon	acd, scd, qcd, xcd, prb, plt	/<class>93r/<class>93r_c.dat		ADAS208, c-r	resolved	high
Carbon	acd, scd, ccd, prb, plt, prc	/<class>96/<class>96_c.dat		ADAS208, c-r	unresolved	high
Carbon	acd, scd, ccd, qcd, xcd, prb, plt, prc	/<class>96/<class>96_c.dat		ADAS208, c-r	resolved	high
Nitrogen	acd, scd	/<class>74/<class>74_n.dat		Summers, c-r	unresolved	medium
Nitrogen	acd, scd	/<class>85/<class>85_n.dat		Arnaud & Rothenflug *HPS c-r	unresolved	medium
Nitrogen	acd, scd, ccd, prb, prc, plt, pls	/<class>89/<class>89_n.dat		JET base line	unresolved	low
Nitrogen	acd, scd, ccd, prb, plt, prc	/<class>96/<class>96_n.dat		ADAS208, c-r	unresolved	high
Nitrogen	acd, scd, ccd, qcd, xcd, prb, plt, prc	/<class>96/<class>96_ndat		ADAS208, c-r	resolved	high
Oxygen	acd, scd	/<class>74/<class>74_o.dat		Summers, c-r	unresolved	medium
Oxygen	acd, scd	/<class>85/<class>85_o.dat		Arnaud & Rothenflug *HPS c-r	unresolved	medium
Oxygen	acd, scd, ccd, prb, prc, plt, pls	/<class>89/<class>89_o.dat		JET base line	unresolved	low
Oxygen	acd, scd, qcd, xcd, prb, plt	/<class>93r/<class>93r_o.dat		ADAS208, c-r	resolved	high
Oxygen	acd, scd, ccd, prb, plt, prc	/<class>96/<class>96_o.dat		ADAS208, c-r	unresolved	high
Oxygen	acd, scd, ccd, qcd, xcd, prb, plt, prc	/<class>96/<class>96_o.dat		ADAS208, c-r	resolved	high
Fluorine	acd, scd	/<class>74/<class>74_f.dat		Summers, c-r	unresolved	medium
Fluorine	acd, scd	/<class>85/<class>85_f.dat		Arnaud & Rothenflug *HPS c-r	unresolved	medium
Fluorine	acd, scd, ccd, prb, prc, plt, pls	/<class>89/<class>89_f.dat		JET base line	unresolved	low
Neon	acd, scd	/<class>74/<class>74_ne.dat		Summers, c-r	unresolved	medium

Neon	acd, scd	/<class>85/<class>85_ne.dat	Arnaud & Rothenflug *HPS c-r	unresolved	medium
Neon	acd, scd,ccd,prb,prc,plt,pls	/<class>89/<class>89_ne.dat	JET base line	unresolved	low
Neon	acd, scd, ccd, prb, plt, prc	/<class>96/<class>96_ne.dat	ADAS208, c-r	unresolved	high
Neon	acd, scd, ccd, qcd, xcd, prb, plt, prc	/<class>96/<class>96_ne.dat	ADAS208, c-r	resolved	high
Sodium	acd, scd	/<class>74/<class>74_na.dat	Summers, c-r	unresolved	medium
Sodium	acd, scd	/<class>85/<class>85_na.dat	Arnaud & Rothenflug *HPS c-r	unresolved	medium
Magnesium	acd, scd	/<class>74/<class>74_mg.dat	Summers, c-r	unresolved	medium
Magnesium	acd, scd	/<class>85/<class>85_mg.dat	Arnaud & Rothenflug *HPS c-r	unresolved	medium
Aluminium	acd, scd	/<class>74/<class>74_al.dat	Summers, c-r	unresolved	medium
Aluminium	acd, scd	/<class>85/<class>85_al.dat	Arnaud & Rothenflug *HPS c-r	unresolved	medium
Silicon	acd, scd	/<class>74/<class>74_si.dat	Summers, c-r	unresolved	medium
Silicon	acd, scd	/<class>85/<class>85_si.dat	Arnaud & Rothenflug *HPS c-r	unresolved	medium
Silicon	acd, scd,ccd,prb,prc,plt,pls	/<class>89/<class>89_si.dat	JET base line	unresolved	low
Sulphur	acd, scd	/<class>74/<class>74_s.dat	Summers, c-r	unresolved	medium
Sulphur	acd, scd	/<class>85/<class>85_s.dat	Arnaud & Rothenflug *HPS c-r	unresolved	medium
Sulphur	acd, scd,ccd,prb,prc,plt,pls	/<class>89/<class>89_s.dat	JET base line	unresolved	low
Chlorine	acd, scd,ccd,prb,prc,plt,pls	/<class>89/<class>89_cl.dat	JET base line	unresolved	low
Argon	acd, scd	/<class>74/<class>74_ar.dat	Summers, c-r	unresolved	medium
Argon	acd, scd	/<class>85/<class>85_ar.dat	Arnaud & Rothenflug *HPS c-r	unresolved	medium
Argon	acd, scd,ccd,prb,prc,plt,pls	/<class>89/<class>89_ar.dat	JET base line	unresolved	low
Calcium	acd, scd	/<class>74/<class>74_ca.dat	Summers, c-r	unresolved	medium
Calcium	acd, scd	/<class>85/<class>85_ca.dat	Arnaud & Rothenflug *HPS c-r	unresolved	medium

Iron	acd, scd	/<class>74/<class>74_fe.dat	Summers, c-r	unresolved	medium
Iron	acd, scd	/<class>85/<class>85_fe.dat	Arnaud & Rothenflug *HPS c-r	unresolved	medium
Iron	acd, scd	/<class>93/<class>93_fe.dat	ADAS208, c-r	unresolved	medium
Nickel	acd, scd	/<class>74/<class>74_ni.dat	Summers, c-r	unresolved	medium
Nickel	acd, scd	/<class>85/<class>85_ni.dat	Arnaud & Rothenflug *HPS c-r	unresolved	medium
Nickel	acd, scd,ccd,prb,prc,plt,pls	/<class>89/<class>89_ni.dat	JET base line	unresolved	low
Krypton	acd, scd,ccd,prb,prc,plt,pls	/<class>89/<class>89_kr.dat	JET base line	unresolved	low
Xenon	acd, scd,ccd,prb,prc,plt,pls	/<class>89/<class>89_xe.dat	JET base line	unresolved	low

- Notes:
1. Summers denotes Summers (1974) Appleton Laboratory Report IM3657. Arnaud & Rothenflug denotes
 2. c-r denotes collisional radiative data with density dependence. *HPS c-r indicates Summers (1974) density variation imposed on zero density data.
 3. JET base line denotes simplified calculations reproducible by ADAS408 using *adf03* data sets.
 4. r denotes resolved data format generated by ADAS208 in combination with ADAS204 to give *adf10* iso-electronic data type, post-processed with ADAS404 to give *adf11* isonuclear data type.
 5. The 1996 data is the year number used for the output from the GCR Project. They are available both resolved and unresolved and supercede 1993 data.
 6. 24 Oct. 1999 revisions include updates of all the asd11 classes to include nitrogen and oxygen ions and to update helium and carbon ions.

Data lines :

Resolved files

IZMAX, IDMAXD, ITMAXD, IZ1MIN, IZ1MAX

(NMETA(I),I=1,IZMAX+1)

(DDENSD(ID),ID=1,IDMAXD)

(DTEVD(IT),IT=1,ITMAXD)

for IZ1=1,IZMAX

for IPRT and IGRD

Format:

```

IPRT, IGRD [,WVLEN], IZ1, DATE
for IT=1,ITMAXD
    (DRCOFD(*,IT,ID),ID=1,IDMAXD)
repeat
repeat

```

Unresolved files

```

IZMAX, IDMAXD, ITMAXD, IZ1MIN, IZ1MAX
(DDENS(D),ID=1,IDMAXD)
(DTEVD(IT),IT=1,ITMAXD)
for IZ1=1,IZMAX
    [WVLEN,] IZ1, DATE
    for IT=1,ITMAXD
        (DRCOFD(*,IT,ID),ID=1,IDMAXD)
    repeat
repeat

```

variable identification :

<i>name</i>	<i>meaning</i>
IZMAX	nuclear charge
IDMAXD	number of densities
ITMAXD	number of densities
IZ1MIN	lowest ion charge +1
IZ1MAX	highest ion charge

NMETA()	number of metastables for each ionisation stage
DDENSD()	log10(electron density (cm-3))
DTEVD()	log10(electron temperature (eV))
IPRT	parent metastable index
IGRD	recombined ion metastable index
[WVLEN	specific line wavelength (Angstrom) class 9 only]
IZI	recombining ion charge
DATE	date
DRCOFD(,,)	log10(generalised collisional radiative coefficients) (units according to class)

Table B11c - resolved data

4	26	35	1	4	/BERYLLIUM	/DICKSON ET AL 1992								
2	1	2	1	1	-----									
10.00000	10.20003	10.40002	10.59999	10.80003	11.00000	11.20003	11.40002							
11.59999	11.80003	12.00000	12.20003	12.40002	12.59999	12.80003	13.00000							
13.20003	13.40002	13.59999	13.80003	14.00000	14.20003	14.40002	14.59999							
14.80003	15.00000													
0.00015	0.10016	0.20015	0.30015	0.40015	0.50015	0.60015	0.70015							
0.80015	0.90015	1.00015	1.10016	1.20015	1.30015	1.40015	1.50015							
1.60015	1.70015	1.80015	1.90015	2.00015	2.20015	2.40015	2.60015							
2.80015	3.00015	3.20015	3.40015	3.60015	3.80015	4.00015	4.20015							
4.40015	4.60015	4.70015												
-----/ IPRT= 1 / IGRD= 1 /-----/ Z1= 1 / DATE= 16/11/93														
-11.57681	-11.55926	-11.53861	-11.51437	-11.48604	-11.45315	-11.41518	-11.37166							
-11.32210	-11.26598	-11.20285	-11.13244	-11.05561	-10.97341	-10.88689	-10.79719							
-10.70532	-10.61241	-10.51952	-10.42769	-10.33806	-10.25165	-10.16957	-10.09290							
-10.02268	-9.96003													
.														
-7.20840	-7.21561	-7.22233	-7.22831	-7.23329	-7.23700	-7.23918	-7.23957							
-7.23791	-7.23394	-7.22740	-7.21811	-7.20627	-7.19216	-7.17605	-7.15822							

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-7.13895  -7.11852  -7.09722  -7.07531  -7.05308  -7.03080  -7.00876  -6.98724
-6.96650  -6.94684
-6.85348  -6.85100
.
.
.
.
-----/ IPRT= 1 / IGRD= 1 /-----/ Z1= 4 / DATE= 16/11/93
-74.00000 -74.00000 -74.00000 -74.00000 -74.00000 -74.00000 -74.00000 -74.00000
-74.00000 -74.00000 -74.00000 -74.00000 -74.00000 -74.00000 -74.00000 -74.00000
-74.00000 -74.00000 -74.00000 -74.00000 -74.00000 -74.00000 -74.00000 -74.00000
-74.00000 -74.00000
.
.
-9.42566  -9.42504  -9.42431  -9.42348  -9.42260  -9.42169  -9.42080  -9.41994
-9.41916  -9.41849  -9.41796  -9.41761  -9.41747  -9.41757  -9.41794  -9.41862
-9.41964  -9.42102  -9.42267  -9.42448  -9.42633  -9.42810  -9.42968  -9.43096
-9.43182  -9.43215
-----
C
C
C   RATE COEFFICIENTS IN UNITS OF CM**3 S-1
C   -----
C
C   PREPARED USING CODE JETXLE.IONBAL.FORT(WJD404R)
C
C   WILLIAM J. DICKSON   16/11/93
C-----

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Table B11d - unresolved data

2	13	51	1	2	/HELIUM	/ ARNAUD-ROTHEN(NE SCALED)	9/11/90
4.00000	5.00000	6.00000	7.00000	8.00000	9.00000	10.00000	11.00000
12.00000	13.00000	14.00000	15.00000	16.00000			
-0.06466	0.03533	0.13534	0.23535	0.33534	0.43534	0.53534	0.63534
0.73534	0.83534	0.93534	1.03533	1.13534	1.23535	1.33534	1.43534
1.53534	1.63534	1.73534	1.83534	1.93534	2.03533	2.13534	2.23535
2.33534	2.43534	2.53534	2.63534	2.73534	2.83534	2.93534	3.03533
3.13534	3.23535	3.33534	3.43534	3.53534	3.63534	3.73534	3.83534
3.93534	4.03533	4.13534	4.23535	4.33534	4.43534	4.53534	4.63534
4.73534	4.83534	4.93534					
-----/ Z1= 1 / DATE= 09/11/90							
-21.02274	-21.02448	-21.01428	-20.98969	-20.97136	-20.98573	-21.03465	-21.02173
-20.82594	-20.37585	-19.79799	-19.26837	-18.92128			
-8.26043	-8.26360	-8.25394	-8.22642	-8.19355	-8.17223	-8.17398	-8.18895
-8.20194	-8.20187	-8.19411	-8.18816	-8.19132			
-----/ Z1= 2 / DATE= 09/11/90							
-36.43890	-36.43925	-36.43584	-36.42578	-36.40593	-36.37265	-36.31938	-36.23863
-36.10640	-35.80753	-35.19548	-34.17990	-32.98088			
-9.04721	-9.04720	-9.04707	-9.04648	-9.04495	-9.04234	-9.04021	-9.04073
-9.04481	-9.04660	-9.03791	-9.01206	-8.97073			