
ADF06: general z recombination/ionisation data collections

Provides general z recombination/ionisation data. Formatting conventions and variable storage are given below.

Utilising subroutines :

ADAS202

Formatted files to ADF06 specification :

Database Status Date = July, 20 1996 Data type =general z recom./ionis. files Data root =/.../adas/adas/adf06/

<i>Sequence</i>	<i>Members</i>	<i>Library</i>	<i>Z1 range</i>	<i>Comments</i>	<i>Quality</i>
H-like	r#hps88	hlike	4-18	Summers	medium/high
	r#ver1		6-28	Summers	medium/high
He-like	r#hps88	helike	3-27	Summers	medium/high
	r#ver1		5-27	Summers	medium/high
	r#ver3		3-21	Summers	medium/high
Li-like	r#hps88	lilike	2-26	Summers	medium/high
	r#ver3		2-20	Summers	medium/high

Notes:

Data lines :

SEQ, IZMAX, (Z1A(IZ),IZ=1,IZMAX)

DARTIT, MAXTR, TITR

(N0A(IZ),IZ=1,IZMAX)

(V0A(IZ),IZ=1,IZMAX)

PHFRA(IZ),IZ=1,IZMAX)

Format:

```
(EDISPA(IZ),IZ=1,IZMAX)
(SCALEA(IZ),IZ=1,IZMAX)
for IT=1,ITMAX
    THETRA(IT),(ALFA(IZ,IT),IZ=1,IZMAX)
repeat

DADTIT, MAXTD, NTRANS, TITD
for itr = 1, NTRANS
    TRTIT, ITYPEA, NIA, LIA, WIA, NJA, LJA, WJA
    (NIA(IZ),IZ=1,IZMAX)
    (V1A(IZ),IZ=1,IZMAX)
    (PHFRA(IZ),IZ=1,IZMAX)
    (EIJA(IZ),IZ=1,IZMAX)
    (FIJA(IZ),IZ=1,IZMAX)
    (EDISPA(IZ),IZ=1,IZMAX)
    (SCALEA(IZ),IZ=1,IZMAX)
    (CORFA(IZ),IZ=1,IZMAX)
repeat
for IT=1,ITMAX
    THETDA(IT),(ALFA(IZ,IT),IZ=1,IZMAX)
repeat

DAITIT, MAXTI, NIGRP, NRGRP, TITI
(NSHELA(IIGRP),IIGRP=1,NIGRP)
for IIGRP=1,NIGRP
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    for ISHEL=1,NSHELA(IIGRP)
        (ZETAA(IZ,ISHEL),IZ=1,IZMAX)
        (EIONA(IZ,ISHEL),IZ=1,IZMAX)
    repeat
        (CIA(IZ),IZ=1,IZMAX)
repeat
(NRESOA(IRGRP),IRGRP=1,NRGRP)
for IRGRP=1,NRGRP
    for IRESO=1,NRESOA(IRGRP)
        (WGHTA(IZ,IRESO),IZ=1,IZMAX)
        (ENERA(IZ,IRESO),IZ=1,IZMAX)
    repeat
        (CRA(IZ),IZ=1,IZMAX)
repeat
for IT=1,ITMAX
    THETIA(IT), (SA(IZ,IT),IZ=1,IZMAX)
repeat

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variable identification :

<i>name</i>	<i>meaning</i>
SEQ	isoelectronic sequence symbol
IZMAX	number of charge states of sequence
Z1A()	ion charges +1
DARTIT	brief radiative recombination title
MAXTR	number of temperatures at which ALFR is tabulated

TITR	descriptor of data source
N0A()	lowest accessible n-shell
V0A()	effective principal quantum number for lowest n
PHFRA()	phase space occupancy for lowest n
EDISPA()	temperature gradient adjustment of Von Goeler to lowest n
SCALEA()	scale adjustment of Von Goeler to lowest n
THETRA()	reduced temperatures (K)
ALFR(,)	radiative recombination coefficients (cm ³ s ⁻¹)
DADTIT	brief dielectronic recombination title
MAXTD	number of temperatures at which ALFD is tabulated
NTRANS	number of parent transitions
TITD	descriptor of data source
TRTIT()	parent transition title
ITYPEA()	parent transition type
NIA()	initial principal quantum number for parent transition
LIA()	initial angular quantum number for parent transition
WIA()	initial statistical weight for parent transition
NJA()	final principal quantum number for parent transition
LJA()	final angular quantum number for parent transition
WJA()	final statistical weight for parent transition
N1A(,)	lowest accessible n-shell
V1A(,)	effective principal quantum number for lowest n
PHFRA(,)	phase space occupancy factor
EIJA(,)	parent transition energy (Ryd)

FIJA(,)	parent absorption oscillator strength
EDISPA(,)	General Formula energy shift (reduced units)
SCALEA(,)	General Formula scaling factor
CORFA(,)	General Program Bethhe adjustment
THETDA()	reduced temperatures (K)
ALFD(,)	dielectronic recombination coefficients
DAITIT	brief ionisation title
MAXTI	number of temperatures at which S is tabulated
NIGRP	number of ionisation rate coefficient groups
NRGRP	number of excit/autoionisation coefficient groups
TITI	descriptor of data source
NSHELA()	number of separate shells in ionisation group
ZETAA(,)	number of equivalent electrons for shell
EIONA(,)	ionisation energy for shell (Ryd)
CIA(,)	scaling factor of approximate form for ionisation group
NRESOA()	number of separate resonances in group
WGHTA(,,)	weighting for resonance
ENERA(,,)	excitation energy for resonance
CRA(,)	scaling factor for approximate form for resonance group
THETIA()	reduced temperatures (K)
SA(,)	ionisation coefficients (cm ³ s ⁻¹)

Table B6c - example.

H-LIKE ION		RECOMB.	7	3.0	5.0	7.0	9.0	13.0	17.0	21.0
RAD. DATA		7	HPS NUMERICAL POTENTIAL - BEST ESTIMATE							
	1	1	1	1	1	1	1	1	1	1
	0.89200	0.93100	0.95000	0.96000	0.97100	0.97700	0.98000			
	0.50000	0.50000	0.50000	0.50000	0.50000	0.50000	0.50000	0.50000	0.50000	0.50000
	-0.10634	-0.09426	-0.08839	-0.08350	-0.08209	-0.07995	-0.07864			
	1.49115	1.26960	1.16535	1.09813	1.02992	0.99532	0.98395			
5.00E	03	1.91E-12	3.06E-12	4.20E-12	5.34E-12	7.60E-12	9.85E-12	1.22E-11		
1.00E	04	1.17E-12	1.85E-12	2.54E-12	3.22E-12	4.57E-12	5.93E-12	7.31E-12		
2.00E	04	7.03E-13	1.10E-12	1.50E-12	1.90E-12	2.69E-12	3.49E-12	4.29E-12		
5.00E	04	3.51E-13	5.40E-13	7.27E-13	9.12E-13	1.28E-12	1.65E-12	2.03E-12		
1.00E	05	2.03E-13	3.05E-13	4.07E-13	5.06E-13	7.07E-13	9.10E-13	1.12E-12		
2.00E	05	1.15E-13	1.67E-13	2.20E-13	2.71E-13	3.76E-13	4.81E-13	5.90E-13		
5.00E	05	4.97E-14	6.99E-14	9.03E-14	1.10E-13	1.51E-13	1.92E-13	2.35E-13		
DIEL.DATA		9	1	DUBAU + GUESSED PROJECTION TO LOW Z						
1S-2P	1	1	0	2.0	2	1	6.0		
	2	2	2	2	2	2	2	2	2	2
	1.83200	1.87000	1.90400	1.96800	1.97300	1.97500	1.97600			
	0.75000	0.75000	0.75000	0.75000	0.75000	0.75000	0.75000	0.75000	0.75000	0.75000
	27.00128	48.04080	75.10180	244.11780	365.53000	511.99000	594.76000			
	0.41600	0.41600	0.41600	0.41600	0.41600	0.41600	0.41600	0.41600	0.41600	0.41600
	0.50000	0.30000	-1.10000	-7.30000	-10.31600	-6.80587	-1.46818			
	0.47500	0.51500	0.55700	0.73600	0.82746	0.84976	0.87766			
	3.16778	2.64498	2.19490	1.02173	0.58563	0.35373	0.22120			
5.00E	03	1.57E-22	1.63E-20	1.75E-19	1.37E-18	9.77E-19	7.24E-19	6.81E-19		
1.00E	04	4.81E-17	2.91E-16	7.17E-16	1.82E-15	1.90E-15	1.75E-15	1.69E-15		
2.00E	04	2.73E-14	5.18E-14	6.84E-14	7.94E-14	7.54E-14	6.38E-14	5.97E-14		
3.00E	04	1.89E-13	2.53E-13	2.76E-13	2.39E-13	2.13E-13	1.74E-13	1.61E-13		
5.00E	04	6.89E-13	7.10E-13	6.68E-13	4.54E-13	3.85E-13	3.05E-13	2.78E-13		
1.00E	05	1.16E-12	9.91E-13	8.38E-13	4.74E-13	3.87E-13	2.98E-13	2.70E-13		
2.00E	05	9.03E-13	7.02E-13	5.63E-13	2.90E-13	2.32E-13	1.77E-13	1.59E-13		
3.00E	05	6.39E-13	4.82E-13	3.80E-13	1.90E-13	1.51E-13	1.15E-13	1.03E-13		
5.00E	05	3.67E-13	2.70E-13	2.10E-13	1.03E-13	8.10E-14	6.12E-14	5.50E-14		
ION. DATA		9	1	0	BELL, LENNON ET AL - WITH BEST ESTIMATE ADJUSTMENT					
	1	1	1	1	1	1	1	1	1	1
	2.00000	2.00000	2.00000	2.00000	2.00000	2.00000	2.00000	2.00000	2.00000	2.00000
	11.31088	28.82920	54.36100	129.54400	236.95373	459.48500	756.26200			
	1.12700	1.13000	1.13000	1.11000	1.05500	0.87500	0.59500			
5.00E	03	1.60E-27	1.08E-26	1.69E-26	1.77E-26	1.05E-26	6.41E-27	2.39E-27		
1.00E	04	9.17E-19	1.21E-18	9.48E-19	5.34E-19	2.43E-19	1.23E-19	4.28E-20		
2.00E	04	2.61E-14	1.52E-14	8.46E-15	3.32E-15	1.39E-15	6.33E-16	2.12E-16		
3.00E	04	8.79E-13	3.91E-13	1.94E-13	6.43E-14	2.76E-14	1.18E-14	3.90E-15		
5.00E	04	1.64E-11	5.85E-12	2.65E-12	7.34E-13	3.34E-13	1.32E-13	4.31E-14		
1.00E	05	1.69E-10	5.10E-11	2.15E-11	5.31E-12	2.46E-12	8.76E-13	2.84E-13		
2.00E	05	5.99E-10	1.64E-10	6.65E-11	1.65E-11	7.24E-12	2.37E-12	7.66E-13		
3.00E	05	9.32E-10	2.47E-10	9.85E-11	2.52E-11	1.05E-11	3.32E-12	1.07E-12		
5.00E	05	1.33E-09	3.42E-10	1.34E-10	3.56E-11	1.41E-11	4.31E-12	1.39E-12		