ADF08: direct resolved radiative recombination coefficients

Provides resolved radiative recombination coefficient data. Formatting conventions and variable storage are given below.

Utilising subroutines :

    ADAS208   ADAS211

Formatted files to ADF08 specification :

Database Status	Date = March 17, 2003	Data type =rrc files	Data root =/.../adas/adas/adf08/

Recombining seq.	*Members*	*Library*	*Comments*	*Quality*
various		radrec	older versions	varied
bare nucl.	B, Be, C, H, He, O	rrc93##	LS resolution	high
H-like.	B, Be,C, He, O	rrc93#h	LS resolution	medium
He-like	B, Be, C, O	rrc93#he	LS resolution	medium
Li-like	B, Be, C, O	rrc93#li	LS resolution	medium
Be-like	B, C, O	rrc93#be	LS resolution	medium
B-like	C, O	rrc93#b	LS resolution	medium
C-like	O	rrc93#c	LS resolution	medium
N-like	O	rrc93#n	LS resolution	medium
Ti-like	Cr	rrc93#ti	LS resolution	medium
V-like	Cr	rrc93#v	LS resolution	medium
Zr-like	Mo	rrc93#zr	LS resolution	medium
Nb-like	Mo	rrc93#nb	LS resolution	medium
bare nucl.	C,	rrc96##	LS resolution	high
H-like.	C,	rrc96#h	LS resolution	medium
He-like	C,	rrc96#he	LS resolution	medium
Li-like	C	rrc96#li	LS resolution	medium
Be-like	C	rrc96#be	LS resolution	medium
B-like	C	rrc96#b	LS resolution	medium

bare nucl.	N, O, Ne	rrc98##	LS resolution	high
H-like.	N, O, Ne	rrc98#h	LS resolution	medium
He-like	N, O, Ne	rrc98#he	LS resolution	medium
Li-like	N, O, Ne	rrc98#li	LS resolution	medium
Be-like	N, O, Ne	rrc98#be	LS resolution	medium
B-like	N, O, Ne	rrc98#b	LS resolution	medium
C-like	N, O, Ne	rrc98#c	LS resolution	medium
N-like	O, Ne	rrc98#n	LS resolution	medium
O-like	Ne	rrc98#o	LS resolution	medium
F-like	Ne	rrc98#f	LS resolution	medium

Notes:
1. In the individual data set names, the recombining ion symbol is followed by '*ls*' to indicate LS resolution.

2. For proton or deuteron recombination, the '*ls*' postfix on the dataset names is followed by '*h*' or '*l*' to denote high and low temperature ranges.

3. 24 Oct. 1994 revision includes replacement of /rrc98#b/rrc98#b_o3ls.dat.

Data lines :   *Format:*

```
seq='SEQ'  nucchg=IZ0                          ADFID
parent term indexing      bwnp= BWNP  nprnt= NPRNT
-------------------------
indp code      wnp
---- ----      ----------
for indp=1,NPRNT
        INDP  CCPI      WNPI
repeat
ls resolved term indexing    bwnr= BWNR  nlev= NLEV
-------------------------
indx code        s l   xj      wnr
---- ----        - -   --   -----------
```

```
        for indx=1,NLEV
                INDX  CCI        (M)L(  WJ)         WNRI
        repeat
        for IPRT=1,NPRNT

                -------------------------------------------
                prt=IP  trmprt= (TP)  spnprt= SP  nsys= NSYS
                indx  Te=   TE1     TE2     TE3     TE4      TE5      TE6
                ----  ---
                for indx=1,NLEV
                        INDX     ALT1I   ALT2I   ALT3I   ALT4I   ALT5I   ALT6I
                repeat
        repeat
        C-----------------------------------------------------------------
        C DESCRIPTIVE TEXT
        C-----------------------------------------------------------------
```

variable identification :

name	meaning
SEQ	sequence identifier (two characters)
IZ0	nuclear charge
ADFID	ADAS data file type code (ADF08)
BWNP	binding wave number of lowest parent(cm-1)
NPRNT	number of metastable parents
INDP	index of parent
CCPI	configuration (or Eissner code therefor) for parent.
WNPI	energy of parent relative to lowest parent (cm-1)

BWNR	binding wave number of lowest resolved level (cm-1)
NLEV	number of levels in LS-resolved set
INDX	index value for level
CCI	configuration (or Eissner code therefor) for level.
M	multiplicity for level (2*S+1)
L	total orbital quantum number for level
WJ	(statist. weight - 1)/2 in LS case or J quantum number in LSJ case.
WNRI	energy of level relative to ground (cm-1)
IP	index of parent
TP	term specification of parent
SP	spin multiplicity of parent
TE1	electron temperatures (K)
INDX	index of level
ALT1I	radiative recombination coefficients for level

Table B8c - example.

```
SEQ='C '     NUCCHG= 8

  PARENT TERM INDEXING          BWNP=    624383.8   NPRNTI= 2
  --------------------
  INDP   CODE              S L  WI      WNP
  ----   ----              - -  --  ----------
   1     2S2 2P1          (2)1( 2.5)       0.0
   2     2S1 2P2          (4)1( 5.5)   71641.0


  LS RESOLVED TERM INDEXING      BWNR=    443086.0   NTRM= 26
  ------------------------
  INDX   CODE              S L  WJ      WNR
  ----   ----              - -  --  ----------
   1     2S2 2P2          (3)1( 4.0)     208.    {1}2.000 {2}1.333
   2     2S2 2P2          (1)2( 2.0)   20274.    {1}2.000
   3     2S2 2P2          (1)0( 0.0)   43186.    {1}2.000
   4     2S1 2P3          (5)0( 2.0)   60325.    {2}3.000
   5     2S1 2P3          (3)2( 7.0)  120041.    {2}2.000
   6     2S1 2P3          (3)1( 4.0)  142384.    {2}2.000
   7     2S1 2P3          (1)2( 2.0)  187052.    {X}
   8     2S1 2P3          (3)0( 1.0)  197086.    {2}2.000
          .         .         .
  24     2S2 2P1 3D1      (1)3( 3.0)  331820.    {1}1.0
  25     2S2 2P1 3D1      (1)1( 1.0)  332777.    {1}1.0
  26     2P4              (1)0( 0.0)  343305.    {X}0.0




--------------------------------
PRTI= 1  TRMPRT= (2P)  SPNPRT= 2

  INDX TE=  9.00D+03  1.80D+04  4.50D+04  9.00D+04  1.80D+05  4.50D+05  9.00D+05  1.80D+06
  ---- ---
   1        1.33D-12  9.40D-13  5.90D-13  4.10D-13  2.79D-13  1.57D-13  9.39D-14  5.16D-14
   2        6.84D-13  4.83D-13  3.03D-13  2.11D-13  1.44D-13  8.09D-14  4.85D-14  2.67D-14
   3        1.24D-13  8.76D-14  5.50D-14  3.83D-14  2.61D-14  1.47D-14  8.80D-15  4.84D-15
              .         .         .
  24        3.58D-14  2.38D-14  1.30D-14  7.63D-15  4.12D-15  1.60D-15  7.15D-16  2.99D-16
  25        1.40D-14  9.30D-15  5.03D-15  2.91D-15  1.55D-15  5.89D-16  2.58D-16  1.06D-16


--------------------------------
PRTI= 2  TRMPRT= (4P)  SPNPRT= 4

  INDX TE=  9.00D+03  1.80D+04  4.50D+04  9.00D+04  1.80D+05  4.50D+05  9.00D+05  1.80D+06
  ---- ---
   1        1.83D-13  1.31D-13  8.52D-14  6.30D-14  4.77D-14  3.42D-14  2.66D-14  1.96D-14
   4        5.80D-13  4.09D-13  2.57D-13  1.78D-13  1.21D-13  6.81D-14  4.08D-14  2.24D-14
   5        9.11D-13  6.43D-13  4.04D-13  2.81D-13  1.91D-13  1.08D-13  6.47D-14  3.55D-14
   6        4.91D-13  3.46D-13  2.17D-13  1.51D-13  1.03D-13  5.76D-14  3.45D-14  1.89D-14
   8        1.18D-13  8.30D-14  5.15D-14  3.53D-14  2.35D-14  1.29D-14  7.57D-15  4.11D-15
```