

ADAS Subroutine bfttyp

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C
      SUBROUTINE BFTTYP ( NDLEV , NDTRN ,
&                          IZ1      , IL      ,
&                          IA       , CSTRGA , ISA      , ILA      , XJA      , WA      ,
&                          ITRAN   , TCODE  , I1A     , I2A     , AVAL    ,
&                          ICNTE   , ICNTP  , ICNTR   , ICNTH   , ICNTI   ,
&                          IETRN   , PECODE  , TECODE  , IE1A   , IE2A   , AA    ,
&                          CEA
&                          )
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C
C ***** FORTRAN77 SUBROUTINE: BFTTYP *****
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C
C PURPOSE:  TO SORT TRANSITION ARRAYS INTO FOUR TRANSITION/RECOMB TYPES
C           AND ASSIGN INITIAL TYPES TO ELECTRON IMPACT TRANSITIONS
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C
C CALLING PROGRAM: ADAS215
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C
C SUBROUTINE:
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C
C INPUT : (I*4)  NDLEV   = MAXIMUM NUMBER OF LEVELS THAT CAN BE READ
C INPUT : (I*4)  NDTRN   = MAX. NUMBER OF TRANSITIONS THAT CAN BE READ
C
C INPUT : (I*4)  IZ1     = RECOMBINING ION CHARGE READ
C INPUT : (I*4)  IL      = INPUT DATA FILE: NUMBER OF ENERGY LEVELS
C
C INPUT : (I*4)  IA()    = ENERGY LEVEL INDEX NUMBER
C INPUT : (C*18) CSTRGA() = NOMENCLATURE/CONFIGURATION FOR LEVEL 'IA()'
C INPUT : (I*4)  ISA()   = MULTIPLICITY FOR LEVEL 'IA()'
C                       NOTE: (ISA-1)/2 = QUANTUM NUMBER (S)
C INPUT : (I*4)  ILA()   = QUANTUM NUMBER (L) FOR LEVEL 'IA()'
C INPUT : (R*8)  XJA()   = QUANTUM NUMBER (J-VALUE) FOR LEVEL 'IA()'
C                       NOTE: (2*XJA)+1 = STATISTICAL WEIGHT
C INPUT : (R*8)  WA()    = ENERGY RELATIVE TO LEVEL 1 (CM-1) FOR LEVEL
C                       'IA()'
C
C INPUT : (I*4)  ITRAN   = INPUT DATA FILE: NUMBER OF TRANSITIONS
C INPUT : (C*1)  TCODE() = TRANSITION: DATA TYPE POINTER:
C                       ' ' => Electron Impact Transition
C                       'P' => Proton Impact Transition
C                       'H' => Charge Exchange Recombination
C                       'R' => Free Electron Recombination
C                       'I' => Electron Impact Ionisation
C INPUT : (I*4)  I1A()   = TRANSITION:
C                       LOWER ENERGY LEVEL INDEX (CASE ' ' & 'P')
C                       NOT USED (CASE 'H' & 'R')
C INPUT : (I*4)  I2A()   = TRANSITION:
C                       UPPER ENERGY LEVEL INDEX (CASE ' ' & 'P')
C                       CAPTURING LEVEL INDEX (CASE 'H' & 'R')
C INPUT : (R*8)  AVAL()  = TRANSITION:
C                       A-VALUE (SEC-1) (CASE ' ')
C                       NEUTRAL BEAM ENERGY (CASE 'H')
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C                                     NOT USED                                (CASE 'P' & 'R')
C
C OUTPUT: (I*4)  ICNTE  = NUMBER OF ELECTRON IMPACT TRANSITIONS INPUT
C OUTPUT: (I*4)  ICNTP  = NUMBER OF PROTON IMPACT TRANSITIONS INPUT
C OUTPUT: (I*4)  ICNTR  = NUMBER OF FREE ELECTRON RECOMBINATIONS INPUT
C OUTPUT: (I*4)  ICNTH  = NO. OF CHARGE EXCHANGE RECOMBINATIONS INPUT
C OUTPUT: (I*4)  ICNTI  = NO. OF INNNER SHELL IONISATION INPUT
C
C OUTPUT: (I*4)  IETRNI() = INDEX VALUES IN MAIN TRANSITION ARRAYS WHICH
C                                     1ST. DIM.: EL-TRANS. INDEX
C                                     REPRESENT ELECTRON IMPACT TRANSITIONS.
C OUTPUT: (C*1)  PECODE() = ELECTRONIC TRANSITION PLOT SELECTOR:
C                                     ' ' => do not plot
C                                     'P' or 'p' => plot
C                                     1ST. DIM.: EL-TRANS. INDEX
C OUTPUT: (C*1)  TECODE() = ELECTRONIC TRANSITION: DATA TYPE POINTER:
C                                     ' ' => unassigned
C                                     '1' => dipole
C                                     '2' => non-dipole, non-spin change
C                                     '3' => spin change
C                                     '4' => small oscillator strength
C                                     1ST. DIM.: EL-TRANS. INDEX
C
C OUTPUT: (I*4)  IE1A()  = EL-TRANS. LOWER ENERGY LEVEL INDEX
C                                     1ST. DIM.: EL-TRANS. INDEX
C OUTPUT: (I*4)  IE2A()  = EL-TRANS. UPPER ENERGY LEVEL INDEX
C                                     1ST. DIM.: EL-TRANS. INDEX
C OUTPUT: (R*8)  AA()     = EL-TRANS. A-VALUE (SEC-1)
C                                     1ST. DIM.: EL-TRANS. INDEX
C OUTPUT: (R*8)  CEA()   = EL-TRANS. BURGESS & TULLY C-VALUE
C                                     1ST. DIM.: EL-TRANS. INDEX
C
C                                     (R*8)  CEREF  = PARAMETER = REFERENCE VALUE FOR B&T C-VAL.
C                                     (R*8)  FZERO  = PARAMETER = EFF. ZERO FOR F-VALUES IN
C                                               BURGESS & TULLY TYPE SELECTION.
C                                     (R*8)  FBIG   = PARAMETER = F-VALUE FOR TYPE SWITCH 1-4 IN
C                                               BURGESS & TULLY TYPE SELECTION.
C
C ROUTINES: NONE
C
C AUTHOR:  HP SUMMERS, UNIVERSITY OF STRATHCLYDE
C          JA8.08
C          TEL.  0141-553-4196
C
C DATE   :  04/06/98
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C UPDATE:
C
C VERSION:  1.1 DATE: 09/08/98
C MODIFIED: RICHARD MARTIN
C - PUT UNDER SCCS CONTROL.

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CHARACTER* (*)	CSTRGA (NDLEV)			
CHARACTER	PECODE (NDTRN) ,		TCODE (NDTRN)	
CHARACTER	TECODE (NDTRN)			
INTEGER	I1A (NDTRN) ,	I2A (NDTRN) ,	IA (NDLEV) ,	ICNTE
INTEGER	ICNTH ,	ICNTI ,	ICNTP ,	ICNTR
INTEGER	IE1A (NDTRN) ,	IE2A (NDTRN) ,	IETRN (NDTRN)	
INTEGER	IL ,	ILA (NDLEV) ,	ISA (NDLEV) ,	ITRAN
INTEGER	IZ1 ,	NDLEV ,	NDTRN	
REAL*8	AA (NDTRN) ,	AVAL (NDTRN) ,	CEA (NDTRN)	
REAL*8	WA (NDLEV) ,	XJA (NDLEV)		