

ADAS Subroutine e6data

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      SUBROUTINE E6DATA( IUNIT  , NDLEV  , NDTEM  , NDTRN  ,
&                      ELEM    , IZ     , IZ0    , IZ1    ,
&                      IL      ,
&                      IA      , CSTRGA , ISA     , ILA    , XJA    ,
&                      NV      ,
&                      TEA     , DENSA  , PRESA  , RNHNE  , TMA    ,
&                      ITRAN   ,
&                      I1A     , I2A    , APWL   , SWL    , GFT    ,
&                      LVALID  , INDX
&                      )
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C-----
C
C ***** FORTRAN77 SUBROUTINE: E6DATA *****
C
C PURPOSE:  TO FETCH DATA FROM INPUT GFT DATA SET OF TYPE ADF20.
C
C CALLING PROGRAM: ADAS506
C
C          THE UNITS USED IN THE DATA FILE ARE TAKEN AS FOLLOWS:
C
C          ELECTRON TEMPERATURE: KELVIN
C          ELECTRON DENSITY      : CM-3
C          ELECTRON PRESSURE     : K CM-3
C          TIME                   : NOT SPECIFIED
C          WAVELENGTH            : ANGSTROM
C          GFT COEFFT.           : CM3 SEC-1
C
C SUBROUTINE:
C
C INPUT : (I*4)  IUNIT   = UNIT TO WHICH INPUT FILE IS ALLOCATED
C INPUT : (I*4)  NDLEV   = MAXIMUM NUMBER OF LEVELS THAT CAN BE READ
C INPUT : (I*4)  NDTEM   = MAXIMUM NUMBER OF TEMPERATURES
C INPUT : (I*4)  NDTRN   = MAX. NUMBER OF TRANSITIONS THAT CAN BE READ
C
C OUTPUT: (C*2)  ELEM    = ELEMENT SYMBOL.
C OUTPUT: (I*4)  IZ      = RECOMBINED ION CHARGE READ
C OUTPUT: (I*4)  IZ0     =          NUCLEAR CHARGE READ
C OUTPUT: (I*4)  IZ1     = RECOMBINING ION CHARGE READ
C                   (NOTE: IZ1 SHOULD EQUAL IZ+1)
C
C OUTPUT: (I*4)  IL      = INPUT DATA FILE: NUMBER OF ENERGY LEVELS
C
C OUTPUT: (I*4)  IA()    = ENERGY LEVEL INDEX NUMBER
C OUTPUT: (C*18) CSTRGA() = NOMENCLATURE/CONFIGURATION FOR LEVEL 'IA()'
C OUTPUT: (I*4)  ISA()   = MULTIPLICITY FOR LEVEL 'IA()'
C                   NOTE: (ISA-1)/2 = QUANTUM NUMBER (S)
C OUTPUT: (I*4)  ILA()   = QUANTUM NUMBER (L) FOR LEVEL 'IA()'
C OUTPUT: (R*8)  XJA()   = QUANTUM NUMBER (J-VALUE) FOR LEVEL 'IA()'
C                   NOTE: (2*XJA)+1 = STATISTICAL WEIGHT
C
C OUTPUT: (I*4)  NV      = INPUT DATA FILE: NUMBER OF TEMP/DENS/PRESS/
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C
C                                     TIME SETS
C OUTPUT: (R*8)  TEA()   = INPUT DATA FILE: ELECTRON TEMPERATURES (K)
C OUTPUT: (R*8)  DENSA() = INPUT DATA FILE: ELECTRON DENSITIES (CM-3)
C OUTPUT: (R*8)  PRESA() = INPUT DATA FILE: ELECTRON PRESSURES (K CM-3)
C OUTPUT: (R*8)  TMA()   = INPUT DATA FILE: TIMES OR ARBITRARY (S ?)
C
C OUTPUT: (I*4)  ITRAN   = INPUT DATA FILE: NUMBER OF TRANSITIONS
C
C OUTPUT: (I*4)  I1A()   = TRANSITION:
C                               LOWER ENERGY LEVEL INDEX
C OUTPUT: (I*4)  I2A()   = TRANSITION:
C                               UPPER ENERGY LEVEL INDEX
C OUTPUT: (R*8)  APWL()  = APPROXIMATE TRANSITION WAVELENGTH (A)
C OUTPUT: (R*8)  SWL()  = EXACT TRANSITION WAVELENGTH (A) (IF SET)
C OUTPUT: (R*8)  GFT(,)  = GFT COEFFICIENT FOR TRANSITION (CM3 S-1)
C                               1ST DIMENSION - TEMPERATURE 'TEA()'
C                               2ND DIMENSION - TRANSITION INDEX
C OUTPUT: (L*4)  LVALID  = .TRUE. DATA SET READ AND APPEARS VALID
C                               = .FALSE. ERROR DETECTED IN READING DATA SET
C#
C# OUTPUT: (I*4)  INDX()  = TRANSITION INDEX (USED IN DEM CODES)
C
C
C      (I*4)  I4UNIT  = FUNCTION (SEE ROUTINE SECTION BELOW)
C      (I*4)  I4FCTN  = FUNCTION (SEE ROUTINE SECTION BELOW)
C      (I*4)  I4EIZ0  = FUNCTION (SEE ROUTINE SECTION BELOW)
C      (I*4)  I       = GENERAL USE.
C      (I*4)  IABT    = RETURN CODE FROM 'I4FCTN'
C      (I*4)  J       = GENERAL USE.
C      (I*4)  K       = GENERAL USE.
C      (I*4)  NVAL    = GENERAL USE
C      (I*4)  IRECL   = RECORD LENGTH OF INPUT DATASET (<=128)
C
C
C      (C*1)  CSLASH  = '/' - DELIMITER FOR 'XXHKEY'
C      (C*4)  C4      = GENERAL USE FOUR BYTE CHARACTER
C      (C*5)  IONNAM  = EMITTING ION READ FROM DATA SET
C      (C*7)  CKEY1   = 'NLEVELS' - INPUT HEADER KEY
C      (C*6)  CKEY2   = 'NKNOTS' - INPUT HEADER KEY
C      (C*6)  CKEY3   = 'NLINEs' - INPUT HEADER KEY
C      (C*3)  TITLED  = ELEMENT SYMBOL INCLUDING '+'
C      (C*80) CLINE   = CURRENT ENERGY LEVEL INDEX PARAMETER LINE
C      (C*127)BUFFER  = GENERAL STRING BUFFER STORAGE
C
C
C ROUTINES:
C      ROUTINE      SOURCE      BRIEF DESCRIPTION
C      -----
C      XXWORD       ADAS        EXTRACT POSITION OF NUMBER IN BUFFER
C      I4UNIT        ADAS        FETCH UNIT NUMBER FOR OUTPUT OF MESSAGES
C      R8FCTN        ADAS        CONVERTS FROM CHARACTER TO REAL VARIABLE
C      I4FCTN        ADAS        CONVERTS CHARACTER STRING TO INTEGER
C      I4EIZ0        ADAS        RETURNS Z0 FOR GIVEN ELEMENT SYMBOL

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C
C
C ROUTINES: NONE
C
C AUTHOR:  H. P. SUMMERS, JET
C          K1/1/57
C          JET EXT. 4941
C
C DATE:    07/04/94
C
C UPDATE:  APR18-95
C#         A. C. LANZAFAME, DPAP UNIVERSITY OF STRATHCLYDE
C#         TRANSITION INDEX (INDX) ADDED. USED IN DEM CODES
C#         TO IDENTIFY THE TRANSITION
C#
C#         CHARACTER CSTRGA(NDLEV)*(*) changed to CHARACTER*18 CSTRGA(NDLEV)
C#         after experinedc unstable behaviour on Sun workstation
C
C UPDATE:
C VERSION:      1.2                DATE:    09-11-95
C MODIFIED: Alessandro Lanzafame
C              - Commented out superfluous variables
C
C
C VERSION: 1.3                DATE:    06-06-2003
C MODIFIED: Martin O'Mullane
C              - Warn user that the routine is now deprecated
C              and that xxdata_20 should be used instead.
C
C-----
C-----

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| | | | | |
|--------------|-------------------|--------------|--------------|-------|
| CHARACTER*18 | CSTRGA(NDLEV) | | | |
| CHARACTER*2 | ELEM | | | |
| INTEGER | I1A(NDTRN), | I2A(NDTRN), | IA(NDLEV), | IL |
| INTEGER | ILA(NDLEV), | INDX(NDTRN), | ISA(NDLEV), | ITRAN |
| INTEGER | IUNIT, | IZ, | IZ0, | IZ1 |
| INTEGER | NDLEV, | NDTEM, | NDTRN, | NV |
| LOGICAL | LVALID | | | |
| REAL*8 | APWL(NDTRN), | DENSA(NDTEM) | | |
| REAL*8 | GFT(NDTEM,NDTRN), | | PRESA(NDTEM) | |
| REAL*8 | RNHNE(NDTEM), | | SWL(NDTRN) | |
| REAL*8 | TEA(NDTEM), | TMA(NDTEM), | XJA(NDLEV) | |