

ADAS Subroutine e3data

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      SUBROUTINE E3DATA( IUNIT , DSNAME ,
&                        NSTORE , NTDIM , NDDIM ,
&                        IZ0 , IZ , IZ1 , ESYM ,
&                        NBSEL , ISELA ,
&                        CWAVEL , CFILE , CTYPE , CINDM ,
&                        ITA , IDA ,
&                        TETA , TEDA ,
&                        PEC
&                        )
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C
C ***** FORTRAN77 SUBROUTINE: E3DATA *****
C
C PURPOSE: TO FETCH DATA FROM INPUT PHOTON EMISSIVITY FILE
C          FOR A GIVEN EMITTING ION (ELEMENT AND CHARGE).
C          (MEMBER STORED IN IONELEC.DATA - MEMBER PREFIX 'PEC#').
C
C CALLING PROGRAM: ADAS503/SPEC
C
C DATA:
C
C          UP TO 'NSTORE' SETS (DATA-BLOCKS) OF DATA MAY BE READ FROM
C          THE FILE - EACH BLOCK FORMING A COMPLETE SET OF IONIZATIONS
C          PER PHOTON VALUES FOR GIVEN TEMP./DENSITY COMBINATION. EACH
C          DATA-BLOCK IS ANALYSED INDEPENDENTLY OF ANY OTHER DATA-
C          BLOCK.
C
C          THE UNITS USED IN THE DATA FILE ARE TAKEN AS FOLLOWS:
C
C          TEMPERATURES      : EV
C          DENSITIES         : CM-3
C
C SUBROUTINE:
C
C INPUT : (I*4)  IUNIT      = UNIT TO WHICH INPUT FILE IS ALLOCATED.
CA INPUT : (C*80) DSNAME    = NAME OF DATA FILE BEING READ
C
C INPUT : (I*4)  NSTORE     = MAXIMUM NUMBER OF INPUT DATA-BLOCKS THAT
C                          CAN BE STORED.
C INPUT : (I*4)  NTDIM     = MAX NUMBER OF ELECTRON TEMPERATURES ALLOWED
C INPUT : (I*4)  NDDIM     = MAX NUMBER OF ELECTRON DENSITIES ALLOWED
C
C OUTPUT: (I*4)  IZ0       = READ - EMITTING ION - NUCLEAR CHARGE
C OUTPUT: (I*4)  IZ        = READ - EMITTING ION - CHARGE
C OUTPUT: (I*4)  IZ1       = READ - EMITTING ION - CHARGE + 1
C OUTPUT: (C*2)  ESYM      = READ - EMITTING ION - ELEMENT SYMBOL
C
C OUTPUT: (I*4)  NBSEL     = NUMBER OF DATA-BLOCKS ACCEPTED & READ IN.
C OUTPUT: (I*4)  ISELA()   = READ - DATA-SET DATA-BLOCK ENTRY INDICES
C                          DIMENSION: DATA-BLOCK INDEX
C
C OUTPUT: (C*10) CWAVEL()  = READ - WAVELENGTH (ANGSTROMS)
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C          DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (C*8)  CFILE() = READ - SPECIFIC ION FILE SOURCE
C          DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (C*8)  CTYPE() = READ - DATA TYPE
C          DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (C*2)  CINDM() = READ - METASTABLE INDEX
C          DIMENSION: DATA-BLOCK INDEX
C
C OUTPUT: (I*4)  ITA()   = READ - NUMBER OF ELECTRON TEMPERATURES
C          DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (I*4)  IDA()   = READ - NUMBER OF ELECTRON DENSITIES
C          DIMENSION: DATA-BLOCK INDEX
C
C OUTPUT: (R*8)  TETA(,) = READ - ELECTRON TEMPERATURES (UNITS: eV)
C          1st DIMENSION: ELECTRON TEMPERATURE INDEX
C          2nd DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (R*8)  TEDA(,) = READ - ELECTRON DENSITIES (UNITS: CM-3)
C          1st DIMENSION: ELECTRON DENSITY INDEX
C          2nd DIMENSION: DATA-BLOCK INDEX
C
C OUTPUT: (R*8)  PEC(,,) =READ - PHOTON EMISSIVITY VALUES
C          1st DIMENSION: ELECTRON TEMPERATURE INDEX
C          2nd DIMENSION: ELECTRON DENSITY INDEX
C          3rd DIMENSION: DATA-BLOCK INDEX
C
C          (I*4)  I4EIZ0  = FUNCTION - (SEE ROUTINES SECTION BELOW)
C          (I*4)  I4FCTN  = FUNCTION - (SEE ROUTINES SECTION BELOW)
C          (I*4)  I4UNIT  = FUNCTION - (SEE ROUTINES SECTION BELOW)
C          (I*4)  IBLK    = ARRAY INDEX: DATA-BLOCK INDEX
C          (I*4)  ITT     = ARRAY INDEX: ELECTRON TEMPERATURE INDEX
C          (I*4)  ITD     = ARRAY INDEX: ELECTRON DENSITY INDEX
C          (I*4)  NTNUM   = NUMBER OF ELECTRON TEMPERATURES FOR CURRENT
C          DATA-BLOCK
C          (I*4)  NDNUM   = NUMBER OF ELECTRON DENSITIES FOR CURRENT
C          DATA-BLOCK
C          (I*4)  IABT    = RETURN CODE FROM 'I4FCTN'
C          (I*4)  IPOS1   = GENERAL USE STRING INDEX VARIABLE
C          (I*4)  IPOS2   = GENERAL USE STRING INDEX VARIABLE
C
C          (L*4)  LBEND   = IDENTIFIES WHETHER THE LAST OF THE INPUT
C          DATA SUB-BLOCKS HAS BEEN LOCATED.
C          (.TRUE. => END OF SUB-BLOCKS REACHED)
C
C          (C*1)  CSLASH  = '/' - DELIMITER FOR 'XXHKEY'
C          (C*2)  C2      = GENERAL USE TWO BYTE CHARACTER STRING
C          (C*5)  IONNAM  = EMITTING ION READ FROM DATASET
C          (C*6)  CKEY1   = 'FILMEM' - INPUT BLOCK HEADER KEY
C          (C*4)  CKEY2   = 'TYPE ' - INPUT BLOCK HEADER KEY
C          (C*4)  CKEY3   = 'INDM ' - INPUT BLOCK HEADER KEY
C          (C*4)  CKEY4   = 'ISEL ' - INPUT BLOCK HEADER KEY
C          (C*80) C80     = GENERAL USE 80 BYTE CHARACTER STRING FOR
C          THE INPUT OF DATA-SET RECORDS.
C

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C ROUTINES:

C	ROUTINE	SOURCE	BRIEF DESCRIPTION
C	XXHKEY	ADAS	OBTAIN KEY/RESPONSE STRINGS FROM TEXT
C	I4EIZ0	ADAS	INTEGER*4 FUNCTION - RETURNS Z0 FOR GIVEN ELEMENT SYMBOL
C	I4FCTN	ADAS	INTEGER*4 FUNCTION - CONVERT CHARACTER STRING TO INTEGER
C	I4UNIT	ADAS	INTEGER*4 FUNCTION - FETCH UNIT NUMBER FOR OUTPUT OF MESSAGES

C AUTHOR: H. P. SUMMERS
 C K1/1/57
 C JET EXT. 4941

C DATE: 11/10/91

C UPDATE: 05/12/91 - PE BRIDEN: IONNAM NOW ALLOWED TO OCCUPY EITHER
 C 4 OR 5 SPACES IN THE HEADER.

C UPDATE: 23/04/93 - PE BRIDEN - ADAS91: ADDED I4UNIT FUNCTION TO WRITE
 C STATEMENTS FOR SCREEN MESSAGES

C UPDATE: 24/05/93 - PE BRIDEN - ADAS91: CHANGED I4UNIT(0)-> I4UNIT(-1)

C UPDATE: 27/2/95 - L. JALOTA - IDL_ADAS : INCREASED SIZE DSNAME FOR
 C USE UNDER UNIX SYSTEMS

C UNIX-IDL PORT:

C VERSION: 1.2 DATE: 23-1-96

C MODIFIED: TIM HAMMOND (TESSELLA SUPPORT SERVICES PLC)
 C - CORRECTED FORMAT STATEMENTS FOR DSNAME LENGTH

CHARACTER*8	CFILE (NSTORE)
CHARACTER*2	CINDM (NSTORE)
CHARACTER*8	CTYPE (NSTORE)
CHARACTER*10	CWAVEL (NSTORE)
CHARACTER*80	DSNAME
CHARACTER*2	ESYM
INTEGER	IDA (NSTORE), ISELA (NSTORE)
INTEGER	ITA (NSTORE), IUNIT, IZ, IZ0
INTEGER	IZ1, NBSEL, NDDIM, NSTORE
INTEGER	NTDIM
REAL*8	PEC (NTDIM, NDDIM, NSTORE), TEDA (NDDIM, NSTORE)
REAL*8	TETA (NTDIM, NSTORE)