

## ADAS Subroutine c2data

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C
      SUBROUTINE C2DATA( IUNIT , DSNAME ,
&                        NSTORE , NEDIM ,
&                        NBSEL , ISELA ,
&                        CPRIMY , CSECDY , CTYPE,
&                        AMPA , AMSA , ALPHA , ETHRA ,
&                        IEA ,
&                        TEEA , SIA
&                        )
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C
C ***** FORTRAN77 SUBROUTINE: C2DATA *****
C
C PURPOSE: TO FETCH DATA FROM INPUT ION/ATOM CROSS-SECTION
C           FILES OF TYPE ADF02.
C
C CALLING PROGRAM: ADAS302/SSIA
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 CROSS-
C           SECTION VALUES FOR GIVEN COLLISION ENERGIES.
C           EACH DATA-BLOCK IS ANALYSED INDEPENDENTLY OF ANY OTHER
C           DATA-BLOCK.
C
C           THE UNITS USED IN THE DATA FILE ARE TAKEN AS FOLLOWS:
C
C           COLLISION ENERGIES : EV/AMU
C           CROSS-SECTION      : CM**2
C
C SUBROUTINE:
C
C INPUT : (I*4)  IUNIT      = UNIT TO WHICH INPUT FILE IS ALLOCATED.
C INPUT : (C*80) DSNAME    = MVS DATA SET NAME OF DATA SET BEING READ
C
C INPUT : (I*4)  NSTORE    = MAXIMUM NUMBER OF INPUT DATA-BLOCKS THAT
C                           CAN BE STORED.
C INPUT : (I*4)  NEDIM     = MAX NUMBER OF COLLISION ENERGIES ALLOWED
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*5)  CPRIMY()  = READ - PRIMARY SPECIES IDENTIFICATION
C                           DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (C*5)  CSECDY()  = READ - SECONDARY SPECIES IDENTIFICATION
C                           DIMENSION: DATA-BLOCK INDEX
C OUTPUT: (C*3)  CTYPE()   = READ - CROSS-SECTION TYPE
C                           DIMENSION: DATA-BLOCK INDEX
C
C OUTPUT: (R*8)  AMPA()    = READ - PRIMARY SPECIES ATOMIC MASS NUMBER
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C DIMENSION: DATA-BLOCK INDEX  
 C OUTPUT: (R\*8) AMSA() = READ - SECONDARY SPECIES ATOMIC MASS NUMBER  
 C DIMENSION: DATA-BLOCK INDEX  
 C OUTPUT: (R\*8) ALPHA() = READ - HIGH ENERGY EXTRAPOLATION PARM.  
 C DIMENSION: DATA-BLOCK INDEX  
 C OUTPUT: (R\*8) ETHRA() = READ - ENERGY THRESHOLD (EV)  
 C DIMENSION: DATA-BLOCK INDEX  
 C  
 C OUTPUT: (I\*4) IEA() = READ - NUMBER OF COLLISION ENERGIES  
 C DIMENSION: DATA-BLOCK INDEX  
 C  
 C OUTPUT: (R\*8) TEEA(,) = READ - COLLISION ENERGIES (UNITS: eV/AMU)  
 C 1st DIMENSION: COLLISION ENERGY INDEX  
 C 2nd DIMENSION: DATA-BLOCK INDEX  
 C  
 C OUTPUT: (R\*8) SIA(,) =READ - FULL SET OF COLLISION CROSS-  
 C SECTION VALUES (cm\*\*2)  
 C 1st DIMENSION: COLLISION ENERGY INDEX  
 C 2nd 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 ROUTINE SECTION BELOW)  
 C (I\*4) IBLK = ARRAY INDEX: DATA-BLOCK INDEX  
 C (I\*4) ITT = ARRAY INDEX: COLLISION ENERGY INDEX  
 C (I\*4) NENUM = NUMBER OF COLLISION ENERGIES FOR CURRENT  
 C DATA-BLOCK  
 C (I\*4) IABT = RETURN CODE FROM 'I4FCTN'  
 C (I\*4) IPOS2 = GENERAL USE STRING INDEX VARIABLE  
 C  
 C (R\*8) R8FCTN = FUNCTION - (SEE ROUTINES SECTION BELOW)  
 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\*1) CKEY1 = 'P' - INPUT BLOCK HEADER KEY  
 C (C\*1) CKEY2 = 'S' - INPUT BLOCK HEADER KEY  
 C (C\*1) CKEY3 = 'A' - INPUT BLOCK HEADER KEY  
 C (C\*1) CKEY4 = 'E' - INPUT BLOCK HEADER KEY  
 C (C\*4) CKEY5 = 'T' - INPUT BLOCK HEADER KEY  
 C (C\*4) CKEY6 = 'ISEL' - INPUT BLOCK HEADER KEY  
 C (C\*3) C3 = GENERAL USE THREE BYTE CHARACTER STRING  
 C (C\*9) C10 = GENERAL USE NINE BYTE CHARACTER STRING  
 C (C\*80) C80 = GENERAL USE 80 BYTE CHARACTER STRING FOR  
 C THE INPUT OF DATA-SET RECORDS.

C ROUTINES:

| ROUTINE | SOURCE | BRIEF DESCRIPTION                     |
|---------|--------|---------------------------------------|
| XXHKEY  | ADAS   | OBTAIN KEY/RESPONSE STRINGS FROM TEXT |

C I4FCTN ADAS INTEGER\*4 FUNCTION -  
 C CONVERT CHARACTER STRING TO INTEGER  
 C I4UNIT ADAS INTEGER\*4 FUNCTION -  
 C FETCH UNIT NUMBER FOR OUTPUT OF MESSAGES  
 C R8FCTN ADAS REAL\*8 FUNCTION -  
 C CONVERT CHARACTER STRING TO REAL\*8  
 C

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 C

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C - CHANGED INITIALISATION 'CKEY2 //S' //' TO 'CKEY2 //S' / '

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|              |                                 |                      |
|--------------|---------------------------------|----------------------|
| CHARACTER*5  | CPRIMY (NSTORE) ,               | CSECDY (NSTORE)      |
| CHARACTER*3  | CTYPE (NSTORE)                  |                      |
| CHARACTER*80 | DSNAME                          |                      |
| INTEGER      | IEA (NSTORE) , ISELA (NSTORE) , | IUNIT                |
| INTEGER      | NBSEL, NEDIM,                   | NSTORE               |
| REAL*8       | ALPHA (NSTORE) ,                | AMPA (NSTORE)        |
| REAL*8       | AMSA (NSTORE) ,                 | ETHRA (NSTORE)       |
| REAL*8       | SIA (NEDIM, NSTORE) ,           | TEEA (NEDIM, NSTORE) |