

ADAS Subroutine xxdata_01

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      SUBROUTINE xxdata_01( IUNIT  , MXNENG , MXNSHL ,
&                          SYMBR  , SYMBD  , IZR    , IZD    ,
&                          INDD   , NENRGY , NMIN    , NMAX    ,
&                          LPARMS , LSETL  , ENRGYA ,
&                          ALPHAA , LFORMA , XLCUTA , PL2A   ,
&                          PL3A   , SIGTA  , SIGNA  , SIGLA
&                          )
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C
C ***** FORTRAN77 SUBROUTINE: xxdata_01 *****
C
C PURPOSE:  TO FETCH DATA FROM INPUT DATA SET OF TYPE ADF01.
C
C CALLING PROGRAM: ADAS301/ADAS306/ADAS307/ADAS308/ADAS309
C
C DATA:
C
C          THE UNITS USED IN THE DATA FILE ARE TAKEN AS FOLLOWS:
C
C          COLLISION ENERGIES   : KEV/AMU
C          ALPHA                 :
C          TOTAL XSECTS.        : CM2
C          N-SHELL XSECTS.      : CM2
C          NL-SHELL DATA       : CM2
C
C SUBROUTINE:
C
C INPUT : (I*4)  IUNIT      = UNIT TO WHICH INPUT FILE IS ALLOCATED.
C INPUT : (I*4)  MXNENG     = MAXIMUM NO. OF ENERGIES.
C INPUT : (I*4)  MXNSHL    = MAXIMUM NO. OF N SHELLS.
C
C OUTPUT: (C*2)  SYMBR     = READ - RECEIVER ION ELEMENT SYMBOL.
C OUTPUT: (C*2)  SYMBD     = READ - DONOR ION ELEMENT SYMBOL.
C OUTPUT: (I*4)  IZR       = READ - ION CHARGE OF RECEIVER.
C OUTPUT: (I*4)  IZD       = READ - ION CHARGE OF DONOR.
C OUTPUT: (I*4)  INDD      = READ - DONOR STATE INDEX.
C OUTPUT: (I*4)  NENRGY    = NUMBER OF ENERGIES READ.
C OUTPUT: (I*4)  NMIN      = LOWEST N-SHELL FOR WHICH DATA READ.
C OUTPUT: (I*4)  NMAX      = HIGHEST N-SHELL FOR WHICH DATA READ.
C OUTPUT: (L*4)  LPARMS    = FLAGS IF L-SPLITTING PARAMETERS PRESENT.
C                          .TRUE. => L-SPLITTING PARAMETERS PRESENT.
C                          .FALSE => L-SPLITTING PARAMETERS ABSENT.
C OUTPUT: (L*4)  LSETL     = FLAGS IF L-RESOLVED DATA PRESENT.
C                          .TRUE.  => L-RESOLVED DATA PRESENT.
C                          .FALSE => L-RESOLVED DATA ABSENT.
C OUTPUT: (R*8)  ENRGYA()  = READ - COLLISION ENERGIES.
C                          UNITS: EV/AMU (READ AS KEV/AMU)
C                          DIMENSION: ENERGY INDEX
C OUTPUT: (R*8)  ALPHAA()  = READ - EXTRAPOLATION PARAMETER ALPHA.
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C DIMENSION: ENERGY INDEX
 C OUTPUT: (I*4) LFORMA() = READ - PARAMETERS FOR CALCULATING L-RES
 C X-SEC.
 C DIMENSION: ENERGY INDEX
 C OUTPUT: (R*8) XLCUTA() = READ - PARAMETERS FOR CALCULATING L-RES
 C X-SEC.
 C DIMENSION: ENERGY INDEX
 C OUTPUT: (R*8) PL2A() = READ - PARAMETERS FOR CALCULATING L-RES
 C X-SEC.
 C DIMENSION: ENERGY INDEX
 C OUTPUT: (R*8) PL3A() = READ - PARAMETERS FOR CALCULATING L-RES
 C X-SEC.
 C DIMENSION: ENERGY INDEX
 C OUTPUT: (R*8) SIGTA() = READ - TOTAL CHARGE EXCHANGE
 C CROSS-SECTION.
 C UNITS: CM2
 C DIMENSION: ENERGY INDEX
 C OUTPUT: (R*8) SIGNA(,) = READ - N-RESOLVED CHARGE EXCHANGE
 C CROSS-SECTIONS.
 C UNITS: CM2
 C 1ST DIMENSION: ENERGY INDEX
 C 2ND DIMENSION: N-SHELL
 C OUTPUT: (R*8) SIGLA(,) = READ - L-RESOLVED CHARGE EXCHANGE
 C CROSS-SECTIONS.
 C UNITS: CM2
 C 1ST DIMENSION: ENERGY INDEX
 C 2ND DIMENSION: INDEXED BY I4IDFL(N,L)
 C
 C (R*8) ZEROST = PARAMETER = EFFECTIVE SHIFT APPLIED TO
 C CROSS-SECTION VALUES TO AVOID
 C ZERO VALUES (WILL NOT AFFECT
 C ANY VALUES WHICH ARE GREATER
 C THAN AROUND 1.0E+15*ZEROSHFT -
 C i.e. 1.0E-25.)
 C
 C (I*4) OLDMIN = PREVIOUS VALUE READ FOR NMIN.
 C (I*4) OLDMAX = PREVIOUS VALUE READ FOR NMAX.
 C (I*4) IBLK = CURRENT DATA BLOCK.
 C (I*4) IVALUE = USED TO PARSE FOR END OF DATA FLAG (-1).
 C (I*4) N = N QUANTUM NUMBER.
 C (I*4) L = L QUANTUM NUMBER.
 C (I*4) I = LOOP COUNTER.
 C (I*4) J = LOOP COUNTER.
 C (I*4) IERR = ERROR RETURN CODE.
 C (C*2) CIZR = ION CHARGE OF RECEIVER.
 C (C*2) CIZD = ION CHARGE OF DONOR.
 C (C*1) INDD = DONOR STATE INDEX.

C ROUTINES:

ROUTINE	SOURCE	BRIEF DESCRIPTION
I4FCTN	ADAS	RETURNS CHARACTER STRING AS AN INTEGER.
I4UNIT	ADAS	FETCH UNIT NUMBER FOR OUTPUT OF MESSAGES

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C          I4IDFL      ADAS      RETURNS UNIQUE INDEX FROM QUANTUM
C
C          XXIDTL      ADAS      INVERSE OF I4IDFL. RETURNS QUANTUM
C
C                                     NUMBERS N AND L FROM INDEX.
C
C AUTHOR:   JONATHAN NASH (TESSELLA SUPPORT SERVICES PLC)
C          K1/0/81
C          JET EXT. 5183
C
C DATE:    21/09/93
C
C UPDATE:   18/10/93 - J NASH      - ADAS91:
C          UPDATED TO READ L-SPLITTING PARAMETERS IF PRESENT IN DATASET.
C
C UPDATE:   01/05/95 - Tim Hammond - IDLADAS:
C          UNIX port.
C
C UPDATE:   16/05/95 - Tim Hammond - IDLADAS:
C          ADDED AND APPLIED ZEROST PARAMETER => EFFECTIVE ZERO FOR
C          CROSS-SECTIONS (CODING DONE BY PAUL BRIDEN).
C
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C
C
C NOTES: Copied from cxdata.for.
C          Remove the redundant titled from argument list.
C          This is v1.1 of xxdata_01.
C
C
C VERSION   : 1.1
C DATE      : 14-09-2004
C MODIFIED  : Martin O'Mullane
C            - First version.
C
C VERSION   : 1.2
C DATE      : 26-04-2007
C MODIFIED  : Hugh Summers
C            - Remove unused m-subshell data possibility.
C
C VERSION   : 1.3
C DATE      : 22-05-2007
C MODIFIED  : Martin O'Mullane
C            - Initialize output arrays to zero.
C
C VERSION   : 1.4
C DATE      : 12-06-2008
C MODIFIED  : Allan Whiteford
C            - Correctly parse files which contain m-subshell
C              data and print a warning to say that the m-resolved
C              data were ignored.
C
C-----
C
```

C

CHARACTER*2	SYMBD,	SYMBR		
INTEGER	INDD,	IUNIT,	IZD,	IZR
INTEGER	LFORMA (MXNENG) ,		MXNENG,	MXNSHL
INTEGER	NENRGY,	NMAX,	NMIN	
LOGICAL	LPARMS,	LSETL		
REAL*8	ALPHAA (MXNENG) ,		ENRGYA (MXNENG)	
REAL*8	PL2A (MXNENG) ,		PL3A (MXNENG)	
REAL*8	SIGLA (MXNENG, (MXNSHL* (MXNSHL+1)) / 2)			
REAL*8	SIGNA (MXNENG, MXNSHL) ,		SIGTA (MXNENG)	
REAL*8	XLCUTA (MXNENG)			