

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 ELMENT 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).
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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
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C-----
C          CHARACTER*2      SYMBD,          SYMBR
C          INTEGER          INDD,           IUNIT,          IZD,           IZR
C          INTEGER          LFORMA (MXNENG) ,      MXNENG,          MXNSHL
C          INTEGER          NENRGY,          NMAX,           NMIN
C          LOGICAL          LPARMS,          LSETL
C          REAL*8           ALPHA (MXNENG) ,      ENRGYA (MXNENG)

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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)
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