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C INPUT : (R*8) ENRGYA() = READ - COLLISION ENERGIES.
C                               UNITS: EV/AMU (READ AS KEV/AMU)
C                               DIMENSION: ENERGY INDEX
C INPUT : (R*8) ALPHAA() = READ - EXTRAPOLATION PARAMETER ALPHA.
C                               DIMENSION: ENERGY INDEX
C INPUT : (I*4) LFORMA() = READ - PARAMETERS FOR CALCULATING L-RES
C                               X-SEC.
C                               DIMENSION: ENERGY INDEX
C INPUT : (R*8) XLCUTA() = READ - PARAMETERS FOR CALCULATING L-RES
C                               X-SEC.
C                               DIMENSION: ENERGY INDEX
C INPUT : (R*8) PL2A() = READ - PARAMETERS FOR CALCULATING L-RES
C                               X-SEC.
C                               DIMENSION: ENERGY INDEX
C INPUT : (R*8) PL3A() = READ - PARAMETERS FOR CALCULATING L-RES
C                               X-SEC.
C                               DIMENSION: ENERGY INDEX
C INPUT : (R*8) SIGTA() = READ - TOTAL CHARGE EXCHANGE
C                               CROSS-SECTION.
C                               UNITS: CM2
C                               DIMENSION: ENERGY INDEX
C INPUT : (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 INPUT : (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 INPUT : (R*8) SIGMA(,) = READ - M-RESOLVED CHARGE EXCHANGE
C                               CROSS-SECTIONS.
C                               UNITS: CM2
C                               1ST DIMENSION: ENERGY INDEX
C                               2ND DIMENSION: INDEXED BY I4IDFM(N,L,M)
C                               WITH M >= 0 ONLY
C (I*4) NWIDTH = NUMBER OF ENERGY VALUES PER LINE
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) M = M QUANTUM NUMBER.
C (I*4) I = LOOP COUNTER.
C (I*4) K = LOOP COUNTER.
C (I*4) IERR = ERROR RETURN CODE.
C (R*8) ALPH0 = LOW ENERGY PARAMETER FOR ILTYP = 1
C (C*1) INDD = DONOR STATE INDEX.
C (C*9) FST = FINAL STATE NAME.
C (C*9) BLK9 = BLANK STRING OF LENGTH 9.
C (C*1) LCHRA() = CHARACTER FOR L ANG.MOM.INDEXED BY L+1
C ROUTINES:
C ROUTINE SOURCE BRIEF DESCRIPTION

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C -----
C      I4FCTN      ADAS      RETURNS CHARACTER STRING AS AN INTEGER.
C      I4UNIT      ADAS      FETCH UNIT NUMBER FOR OUTPUT OF MESSAGES
C      I4IDFL      ADAS      RETURNS UNIQUE INDEX FROM QUANTUM
C                               NUMBERS N AND L.
C      I4IDFM      ADAS      RETURNS UNIQUE INDEX FROM QUANTUM
C                               NUMBERS N, L AND M.
C      XXIDTL      ADAS      INVERSE OF I4IDFL. RETURNS QUANTUM
C                               NUMBERS N AND L FROM INDEX.
C      XXIDTM      ADAS      INVERSE OF I4IDFM. RETURNS QUANTUM
C                               NUMBERS N, L AND M FROM INDEX.
C      XXNAME      ADAS      FINDS REAL NAME OF USER
C      XXSLEN      ADAS      FINDS NON BLANK PART OF STRING
C AUTHOR: H. P. SUMMERS, UNIVERSITY OF STRATHCLYDE
C      JA8.08
C      TEL. 0141-553-4196
C DATE:      13/11/95
C UPDATE:    27/08/97  HP SUMMERS - CHANGED NAME FROM CCWR12 TO CDWR12
C UPDATE:    09/07/98  Martin O'Mullane - added DATE to input list and
C                               removed call to xxuid
C
C VERSION: 1.1 DATE: 01-12-98
C MODIFIED: RICHARD MARTIN
C - PUT UNDER SCCS CONTROL
C
C VERSION: 1.2 DATE: 17-05-07
C MODIFIED: Allan Whiteford
C - Updated comments as part of subroutine documentation
C      procedure.
C
C VERSION   : 1.3
C DATE      : 22-05-2007
C MODIFIED  : Martin O'Mullane
C      - Remove unused m-subshell data possibility.
C
C-----
C-----

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CHARACTER*2      CATYP
CHARACTER*8      DATE
CHARACTER*80     DSFULL
CHARACTER*2      SYMBD,          SYMBR
INTEGER          ILTYP,          INDD,          IUNIT,          IZD
INTEGER          IZR,            LFORMA (MXNENG) ,          MXNENG
INTEGER          MXNSHL,         NENRGY,         NMAX,          NMIN
LOGICAL          LPARMS,         LSETL,         LSETM
REAL*8           ALPHAA (MXNENG) ,          ENRGYA (NENRGY)
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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