

ADAS Subroutine cewr11

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      SUBROUTINE CEWR11( DSFULL , DATE ,
&                      IUNIT , MXNENG , MXNSHL ,
&                      CATYP , AMDON , AMREC , DREN ,
&                      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: CEWR11 *****
C
C PURPOSE:  TO OUTPUT DATA TO MODIFIED ADF01 FILE.
C
C          IF THE ADF01 FILE IS FOR THERMAL/THERMAL,
C          THERMAL/DONOR OR THERMAL/RECEIVER THEN THE RATE
C          (PASSED AS SIGMA) IS DIVIDED BY
C          1.384D4 * 100 * DSQRT(TE)
C          IN ORDER TO ALLOW THE FILE TO BE USED WITH UNMODIFIED
C          SERIES 3 PROGRAMS.
C
C CALLING PROGRAM: ADAS314
C
C DATA:
C          THE UNITS USED IN THE DATA FILE ARE TAKEN AS FOLLOWS:
C          COLLISION ENERGIES   : KEV/AMU
C          ALPHA                 :
C          TOTAL XSECTS.        : CM2
C          N-SHELL XSECTS.      : CM2
C          NL-SHELL DATA       : CM2
C          NLM-SHELL DATA      : CM2
C
C SUBROUTINE:
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C INPUT : (I*4)  IUNIT          = INPUT UNIT NUMBER FOR RESULTS
C INPUT : (I*4)  MXNENG         = MAXIMUM NO. OF ENERGIES.
C INPUT : (I*4)  MXNSHL        = MAXIMUM NO. OF N SHELLS.
C INPUT : (C*80) TITLED         = NOT SET - TITLE FOR DATA SOURCE.
C INPUT : (C*80) DSFULL        = SOURCE DATASET
C INPUT : (C2)   CATYP          = 'TT' THERMAL/THERMAL (EQUAL TEMPERATURES
C                               FOR DONOR AND RECEIVER ONLY)
C                               'TR' THERMAL RECEIVER, MONOENERGETIC DONOR
C                               'TD' THERMAL DONOR, MONOENERGETIC RECEIVER
C                               'ME' SPECIAL MONOENERGETIC CASE
C INPUT : (R*8)  AMDON         = DONOR MASS NUMBER
C INPUT : (R*8)  AMREC         = RECEIVER MASS NUMBER
C INPUT : (R*8)  DREN          = DONOR ENERGY ( 'TR' CASE )
C                               RECEIVER ENERGY ( 'TD' CASE )
C INPUT : (C*2)  SYMBR         = READ - RECEIVER ION ELEMENT SYMBOL.
C INPUT : (C*2)  SYMBD         = READ - DONOR ION ELEMENT SYMBOL.
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C INPUT : (I*4)  IZR      = READ - ION CHARGE OF RECEIVER.
C INPUT : (I*4)  IZD      = READ - ION CHARGE OF DONOR.
C INPUT : (I*4)  INDD     = READ - DONOR STATE INDEX.
C INPUT : (I*4)  NENRGY   = NUMBER OF ENERGIES READ.
C INPUT : (I*4)  NMIN     = LOWEST N-SHELL FOR WHICH DATA READ.
C INPUT : (I*4)  NMAX     = HIGHEST N-SHELL FOR WHICH DATA READ.
C INPUT : (L*4)  LPARMS   = FLAGS IF L-SPLITTING PARAMETERS PRESENT.
C                               .TRUE.  => L-SPLITTING PARAMETERS PRESENT.
C                               .FALSE => L-SPLITTING PARAMETERS ABSENT.
C INPUT : (L*4)  LSETL    = FLAGS IF L-RESOLVED DATA PRESENT.
C                               .TRUE.  => L-RESOLVED DATA PRESENT.
C                               .FALSE => L-RESOLVED DATA ABSENT.
C INPUT : (L*4)  LSETM    = FLAGS IF M-RESOLVED DATA PRESENT.
C                               .TRUE.  => M-RESOLVED DATA PRESENT.
C                               .FALSE => M-RESOLVED DATA ABSENT.
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

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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 (C*1) INDD = DONOR STATE INDEX.
 C (C*28) UID = USER IDENTIFIER.
 C (C*8) DATE = CURRENT DATE.
 C (R*8) FMUL = MULTIPLIER 1.384D4 * 100

C ROUTINES:

ROUTINE	SOURCE	BRIEF DESCRIPTION
I4FCTN	ADAS	RETURNS CHARACTER STRING AS AN INTEGER.
I4UNIT	ADAS	FETCH UNIT NUMBER FOR OUTPUT OF MESSAGES
I4IDFL	ADAS	RETURNS UNIQUE INDEX FROM QUANTUM NUMBERS N AND L.
I4IDFM	ADAS	RETURNS UNIQUE INDEX FROM QUANTUM NUMBERS N, L AND M.
XXIDTL	ADAS	INVERSE OF I4IDFL. RETURNS QUANTUM NUMBERS N AND L FROM INDEX.
XXIDTM	ADAS	INVERSE OF I4IDFM. RETURNS QUANTUM NUMBERS N, L AND M FROM INDEX.
XXNAME	ADAS	FINDS REAL NAME OF USER
XXSLEN	ADAS	FINDS NON BLANK PART OF STRING

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 C JA8.08
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C DATE: 19/09/95

C UPDATE: 27/08/97 HP SUMMERS - CHANGED NAME FROM CCWR11 TO CDWR11
 C REMOVED REDUNDANT FORMATS 2000, 2006

C UPDATE: 09/07/98 Martin O'Mullane - added DATE to input list and
 C removed call to xxuid

C VERSION: 1.1 DATE: 01-12-98

C MODIFIED: RICHARD MARTIN
 C - PUT UNDER SCCS CONTROL

C VERSION: 1.2 DATE: 24-03-99
 C MODIFIED: MARTIN O'MULLANE
 C - SECOND VERSION

C VERSION: 1.3 DATE: 17-05-07
 C MODIFIED: Allan Whiteford
 C - Updated comments as part of subroutine documentation
 C procedure.

C
C VERSION : 1.4
C DATE : 22-05-2007
C MODIFIED : Martin O'Mullane
C - Remove unused m-subshell data possibility.
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CHARACTER*2	CATYP			
CHARACTER*8	DATE			
CHARACTER*80	DSFULL			
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) ,		AMDON,	AMREC
REAL*8	DREN,	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)			