

ADAS Subroutine c3alrs

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      SUBROUTINE C3ALRS( IORD , EM1 , EM2 ,  
&                      EPRO , TTAR , ETHR ,  
&                      YA   , N   , NS   ,  
&                      OA   , SQEF  
&                      )
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C ***** FORTRAN77 SUBROUTINE : C3ALRS *****  
C  
C PURPOSE:  COMPUTES ALPHAS AND REDUCED SPEEDS.  RETURNS AN EFFECTIVE  
C           CHARGE-EXCHANGE RATE COEFFICIENT  
C  
C CALLING PROGRAM:  SQEF  
C  
C SUBROUTINE:  
C  
C INPUT : (I*4)  IORD  = 1 FOR 1ST PARTICLE INCIDENT AND MONOENERGETIC  
C           = 2 FOR 2ND PARTICLE INCIDENT AND MONOENERGETIC  
C INPUT : (I*4)  ISEL  = SELECTOR FOR PARTICULAR RATE COEFFT.  
C           CHOSEN FROM TABLE  
C INPUT : (R*8)  EM1   = ATOMIC MASS NUMBER FOR 1ST PARTICLE  
C INPUT : (R*8)  EM2   = ATOMIC MASS NUMBER FOR 2ND PARTICLE  
C INPUT : (R*8)  EPRO  = INCIDENT PARTICLE ENERGY (EV/AMU)  
C INPUT : (R*8)  TTAR  = MAXWELL TEMPERATURE OF TARGET PARTICLES (EV)  
C INPUT : (R*8)  ETHR  = THRESHOLD ENERGY  
C INPUT : (R*8)  ZSEL  = NUCLEAR CHARGE (REQUIRED ONLY  
C           FOR PARTICULAR ISEL)  
C INPUT : (I*4)  NSEL  = PRINC. QUANTUM NO. (REQUIRED ONLY  
C           FOR PARTICULAR ISEL  
C           NB. NSEL SHOULD BE ZERO ON ENTRY OTHERWISE)  
C INPUT : (I*4)  N     = NUMBER OF SOURCE DATA VALUES  
C  
C OUTPUT: (R*8)  SQEF  = RATE COEFFICIENT (CM3 SEC-1)  
C OUTPUT: (R*8)  OA()  = RATE COEFFTS. (CM**3 SEC-1) FOR SELECTED  
C           SOURCE DATA  
C OUTPUT: (R*8)  EA()  = SET OF ENERGIES (EV/AMU) FOR  
C           SELECTED SOURCE DATA  
C I/O   : (R*8)  YA()  = ENERGIES ON INPUT, SPEEDS ON OUTPUT  
C  
C           (I*4)  ISWIT = ENERGY RANGE SWITCHING INDEX  
C           (I*4)  I     = GENERAL INDEX  
C           (I*4)  K     = GENERAL INDEX  
C  
C           (R*8)  ABI   = FUNCTION - SEE BELOW  
C           (R*8)  EMT   = SELECTED MASS  
C           (R*8)  F     = GENERAL VARIABLE  
C           (R*8)  SUM   = GENERAL VARIABLE  
C           (R*8)  SXI   = GENERAL VARIABLE  
C           (R*8)  SXXI  = GENERAL VARIABLE  
C           (R*8)  U     = GENERAL VARIABLE  
C           (R*8)  V     = GENERAL VARIABLE  
C           (R*8)  VTHR  = THRESHOLD SPEED
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C (R*8) X = GENERAL VARIABLE
 C (R*8) XI = GENERAL VARIABLE
 C (R*8) XRMIN = GENERAL VARIABLE
 C (R*8) XXI = GENERAL VARIABLE
 C (R*8) XA() = GAUSS-LAGUERRE NODES (9-POINT)
 C (R*8) WXA() = GAUSS-LAGUERRE WEIGHTS (9-POINT)

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C ROUTINES:

ROUTINE	SOURCE	BRIEF DESCRIPTION
ABI	ADAS	COMPUTES INTEGRAL FOR RATE COEFFICIENT

C AUTHOR: C J. WHITEHEAD, PAP, UNIVERSITY OF STRATHCLYDE
C EXT 4205

C DATE: 14/11/94

C UPDATE: 09/12/94 - HP SUMMERS: ADJUST FORMATTING

C UPDATE: 03/05/95 - PE BRIDEN : ADD DATA DECLARATION FOR F AND EMT.
C (STOPS COMPILATION WARNING OF
C UNINITIALISED VARIABLES.)

C UPDATE: 15/05/95 - TIM HAMMOND: UNIX PORT - PUT INTO SCCS

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INTEGER	IORD,	N,	NS	
REAL*8	EM1,	EM2,	EPRO,	ETHR
REAL*8	OA(24),	SQEF,	TTAR,	YA(24)