

ADAS Subroutine dcstka

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      SUBROUTINE DCSTKA( NDLEV , NDMET ,  
&                      NORD   , NMET   ,  
&                      IORDR  , IMETR  ,  
&                      CMAT   , CC    ,  
&                      STCK  
&                      )
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C  
C *****  
C ***** FORTRAN77 SUBROUTINE: DCSTKA *****  
C *****  
C PURPOSE: TO STACK UP IN 'STCK' THE NON-METASTABLE/ORDINARY EXCITED  
C           LEVEL POPULATION DEPENDENCE ON METASTABLE LEVEL FOR A GIVEN  
C           TEMPERATURE AND DENSITY.  
C  
C CALLING PROGRAM: XCOEF  
C  
C SUBROUTINE:  
C  
C INPUT : (I*4) NDLEV = MAXIMUM NUMBER OF ENERGY LEVELS ALLOWED  
C INPUT : (I*4) NDMET = MAXIMUM NUMBER OF METASTABLE LEVELS ALLOWED  
C  
C INPUT : (I*4) NORD = NUMBER OF ORDINARY EXCITED LEVELS  
C INPUT : (I*4) NMET = NUMBER OF METASTABLE LEVELS  
C  
C INPUT : (I*4) IMETR() = INDEX OF METASTABLE IN COMPLETE LEVEL LIST  
C                       (ARRAY SIZE = 'NDMET' )  
C INPUT : (I*4) IORDR() =INDEX OF ORDINARY EXCITED LEVELS IN COMPLETE  
C                       LEVEL LIST.  
C                       (ARRAY SIZE = 'NDLEV' )  
C  
C INPUT : (R*8) CMAT(,) = INVERTED RATE MATRIX COVERING ALL  
C                       NON-METASTABLE/ORDINARY EXCITED LEVELS.  
C                       (UNITS: SEC)  
C                       VALUES FOR GIVEN TEMPERATURE AND DENSITY.  
C                       1st DIMENSION: ORDINARY EXCITED LEVEL INDEX  
C                       2nd DIMENSION: ORDINARY EXCITED LEVEL INDEX  
C  
C INPUT : (R*8) CC(,) = RATE MATRIX COVERING ALL TRANSITIONS  
C                       (UNITS: SEC-1)  
C                       VALUES FOR GIVEN TEMPERATURE AND DENSITY.  
C                       1st DIMENSION: ENERGY LEVEL INDEX  
C                       2nd DIMENSION: ENERGY LEVEL INDEX  
C  
C OUTPUT: (R*8) STCK(,) = POPULATION MATRIX COVERING ALL NON-METAST-  
C                       ABLE/ORDINARY EXCITED LEVELS AS FUNCTION  
C                       OF METASTABLE INDEX.  
C                       VALUES FOR GIVEN TEMPERATURE AND DENSITY.  
C                       1st DIMENSION: ORDINARY EXCITED LEVEL INDEX  
C                       2nd DIMENSION: METASTABLE LEVEL INDEX  
C  
C           (I*4) IS1 = ORDINARY EXCITED LEVEL INDEX  
C           (I*4) IS2 = ORDINARY EXCITED LEVEL INDEX
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C          (I*4)  IM          = METASTABLE LEVEL ARRAY INDEX
C
C          (R*8)  POP          = VARIABLE USED TO SUM POPULATION VALUES
C
C
C ROUTINES: NONE
C
C NOTE:
C     IF:      n = number of ordinary/non-metastable levels
C              m = number of metastable levels
C     Ro(nxn) = Rate matrix (sec-1) covering transistions between
C              all possible pairs of ordinary levels.
C              row   : final   level
C              column: initial level
C              (Inverse Ro-1(nxn) = 'CMAT(,)' )
C     Rm(nxm) = Rate matrix (sec-1) covering transistions between
C              all combinations of ordinary and metastable level
C              ( = 'CC(,)' - ordinary level part )
C     P(nxm)  = Population matrix giving the population dependence
C              of each ordinary level on metastable level.
C              ( = 'STCK(,)' )
C
C     Therefore:  Ro(nxn).P(nxm) = Rm(nxm)
C
C     =>          P(nxm)  = Ro-1(nxn).Rm(nxm)
C
C
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C          K1/0/81
C          JET EXT. 4569
C
C DATE:    09/10/90
C
C UPDATE:  20/05/93 - P BRIDEN: STCK ARRAY CHANGED FROM REAL*8 -> REAL*4
C
C          Alessandro Lanzafame, STCK back to real*8
C
C VERSION 1.1  DATE: 27-10-97
C RICHARD MARTIN
C PUT UNDER SCCS CONTROL
C
C-----
C
C-----
C
C          INTEGER          IMETR (NDMET) ,          IORDR (NDLEV)
C          INTEGER          NDLEV,          NDMET,          NMET,          NORD
C          REAL*8           CC (NDLEV, NDLEV) ,          CMAT (NDLEV, NDLEV)
C          REAL*8           STCK (NDLEV, NDMET)

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