

ADAS Subroutine bxpoppm

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      SUBROUTINE BXPOPM( NDTEM , NDDEN , NDMET , NDLEV ,  
&                      MAXT   , MAXD   , NMET   ,  
&                      DENSA   , IMETR  ,  
&                      LRSEL   , LHSEL  ,  
&                      RATIA   , RATHA  ,  
&                      STCKM   , STVRM  , STVHM  ,  
&                      POPAR  
&                      )
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C-----  
C  
C ***** FORTRAN77 SUBROUTINE: BXPOPM *****  
C  
C PURPOSE: TO CONSTRUCT METASTABLE LEVEL POPULATIONS.  
C  
C CALLING PROGRAM: ADAS205/ADAS206  
C  
C SUBROUTINE:  
C  
C INPUT : (I*4) NDTEM = MAXIMUM NUMBER OF TEMPERATURES ALLOWED  
C INPUT : (I*4) NDDEN = MAXIMUM NUMBER OF DENSITIES ALLOWED  
C INPUT : (I*4) NDMET = MAXIMUM NUMBER OF METASTABLE LEVELS ALLOWED  
C INPUT : (I*4) NDLEV = MAXIMUM NUMBER OF ENERGY LEVELS ALLOWED  
C  
C INPUT : (I*4) MAXT = NUMBER OF INPUT TEMPERATURES ( 1 ->'NDTEM' )  
C INPUT : (I*4) MAXD = NUMBER OF INPUT DENSITIES ( 1 ->'NDDEN' )  
C INPUT : (I*4) NMET = NUMBER OF METASTABLES LEVELS ( 1 ->'NDMET' )  
C  
C INPUT : (R*8) DENSA() = ELECTRON DENSITIES (UNITS: CM-3)  
C INPUT : (I*4) IMETR() = INDEX OF METASTABLE IN COMPLETE LEVEL LIST  
C                      (ARRAY SIZE = 'NDMET' )  
C  
C INPUT : (L*4) LRSEL = .TRUE. => FREE ELECTRON RECOMBINATION  
C                      REQUESTED.  
C                      = .FALSE. => FREE ELECTRON RECOMBINATION  
C                      NOT REQUESTED.  
C INPUT : (L*4) LHSEL = .TRUE. => CHARGE TRANSFER FROM NEUTRAL  
C                      HYDROGEN REQUESTED.  
C                      = .FALSE. => CHARGE TRANSFER FROM NEUTRAL  
C                      HYDROGEN NOT REQUESTED.  
C  
C INPUT : (R*8) RATIA() = RATIO ( N(Z+1)/N(Z) STAGE ABUNDANCIES )  
C INPUT : (R*8) RATHA() = RATIO (NEUTRAL H DENSITY/ELECTRON DENSITY)  
C  
C INPUT : (R*8) STCKM(,,) = METASTABLE POPULATIONS STACK:  
C                      1st DIMENSION: METASTABLE INDEX  
C                      2nd DIMENSION: TEMPERATURE INDEX  
C                      3rd DIMENSION: DENSITY INDEX  
C INPUT : (R*8) STVRM(,,) = METASTABLE LEVEL:  
C                      FREE-ELECTRON RECOMBINATION COEFFICIENTS  
C                      (UNITS* CM**3/SEC-1)  
C                      1st DIMENSION: METASTABLE INDEX  
C                      2nd DIMENSION: TEMPERATURE INDEX
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C          3rd DIMENSION: DENSITY INDEX
C INPUT : (R*8)  STVHM(,,) = METASTABLE LEVEL:
C          CHARGE-EXCHANGE RECOMBINATION COEFFICIENTS
C          (UNITS* CM**3/SEC-1)
C          1st DIMENSION: METASTABLE INDEX
C          2nd DIMENSION: TEMPERATURE INDEX
C          3rd DIMENSION: DENSITY INDEX
C
C OUTPUT: (R*8)  POPAR(,,) = LEVEL POPULATIONS
C          1st DIMENSION: LEVEL INDEX
C          2nd DIMENSION: TEMPERATURE INDEX
C          3rd DIMENSION: DENSITY INDEX
C          (ON OUTPUT CONTAINS POPULATIONS FOR
C          METASTABLE LEVELS ONLY.)
C
C          (R*8) DCOEF      = DENSITY MULTIPLIED BY RELEVANT RATIOS FOR
C          CALCULATING RECOMBINATION CONTRIBUTIONS.
C
C          (I*4) IT        = TEMPERATURE ARRAY INDEX
C          (I*4) IN        = DENSITY ARRAY INDEX
C          (I*4) IM        = METASTABLE LEVEL ARRAY INDEX
C
C ROUTINES: NONE
C
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C          K1/0/81
C          JET EXT. 4569
C
C DATE:    09/10/90
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C-----
C
C-----
C          INTEGER          IMETR (NDMET) ,          MAXD ,          MAXT
C          INTEGER          NDDEN ,          NDLEV ,          NDMET ,          NDTEM
C          INTEGER          NMET
C          LOGICAL          LHSEL ,          LRSEL
C          REAL*8           DENSA (NDDEN)
C          REAL*8           POPAR (NDLEV , NDTEM , NDDEN) , RATHA (NDDEN)
C          REAL*8           RATIA (NDDEN)
C          REAL*8           STCKM (NDMET , NDTEM , NDDEN)
C          REAL*8           STVHM (NDMET , NDTEM , NDDEN)
C          REAL*8           STVRM (NDMET , NDTEM , NDDEN)

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