ADAS Subroutine h4mxwl

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C
       subroutine h4mxwl( z0    , z      , zeff   ,
     &                    ixtyp , acoeff , s      ,
     &                    wi    , wj     , ei     , ej     ,
     &                    nx    , xa     , omga   ,
     &                    nt    , tea    , upsa
     &                  )
c-----------------------------------------------------------------------
c
c  ***************** fortran77 subroutine: h4mxwl.for *********************
c
c  purpose:  analyse electron impact collision strength data and convert
c        to Maxwell averaged collision strengths.
c
c  notes:    data is fitted with approximate forms to aid interpolation
c            depending on the transition type. these are
c                 1. dipole
c                 2. non-dipole
c                 3. spin change
c                 4. other
c
c  subroutine:
c
c  input : (r*8)  z0       = nuclear charge
c  input : (r*8)  z        = ion charge
c  input : (r*8)  zeff     = ion charge +1
c  input : (i*4)  ixtyp    = 1  dipole transition
c                          = 2  non-dipole transition
c                          = 3  spin change transition
c                          = 4  other
c  input : (r*8)  wi       = lower level statistical weight
c  input : (r*8)  wj       = upper level statistical weight
c  input : (r*8)  ei       = lower level energy (in selected units)
c  input : (r*8)  ej       = upper level energy
c  input : (r*8)  acoeff   = A-value (s-1) (dipole case only)
c  input : (i*4)  nx       = number of X-parm/omega pairs
c  input : (i*4)  nt       = number of output temperatures
c  input : (r*8)  xa(i)    = input X-parm. values
c  input : (r*8)  omga(i)  = input omega values
c  input : (r*8)  tea(i)   = output electron temps.(K)
c
c  output: (r*8)  upsa(i)  = output upsilons
c  output: (r*8)  s        = line strength (dipole case) otherwise zero

c           (i*4)  iibts  = 0  bad point option off
c                          = 1  bad point option on
c           (i*4)  iifpt  = 1  select one point optimising
c                          = 2  select two point optimising
c           (i*4)  iixop  = 0  optimising off
c                          = 1  optimising on  (if allowed)
c           (i*4)  iidif  = 0  ratio fitting for dipole x-sect
c                             (only with optimising)
```

```
c                       = 1  difference fitting for dipole x-sect
c
c  routines:
c          routine    source    brief description
c          ------------------------------------------------------------
c          egasm      adas
c          h4sort     adas      sorts a vector pair by the first vector
c          h4ftsp     adas      evaluate from a spline interpolant
c          h4gspc     adas      generate spline precursors
c          h4lnft     adas      perform linear interpolation
c          h4fasy     adas      evaluate  from spline. of specified asympts.
c          h4gasy     adas      create  specified asympts. for spline
c          h4form     adas      form for spline independent variable
c          h4spl3     adas      calculate spline of various end conditions
c          eei        adas      evaluates exp(x)*E1(x)
c          ee2        adas      evaluates exp(x)E2(x)
c          i4unit     adas      fetch unit number for output of messages
c
c  author:  h. p. summers, university of strathclyde
c           ja7.08
c           tel. 0141-548-4196
c
c  date:   19/07/02
c
c  update:
c
c-----------------------------------------------------------------------
      INTEGER             IXTYP,       NT,          NX
      REAL*8              ACOEFF,      EI,          EJ
      REAL*8              OMGA(NX),    S,           TEA(NT)
      REAL*8              UPSA(NT),    WI,          WJ,          XA(NX)
      REAL*8              Z,           Z0,          ZEFF
```