ADAS Subroutine xxinst

```
       SUBROUTINE XXINST( IUNIT  , DSNAME , LERROR ,
      &                   NDDEN  , NDTIN  , NDZ1V  ,
      &                   IDE    , ITE    , IZE    ,
      &                   DENSR  , TR     , ZIPT   ,
      &                   LSWIT  , EIA    ,
      &                   AIPT
      &                 )
C-------------------------------------------------------------------
C
C  ***************** FORTRAN77 SUBROUTINE: XXINST *******************
C
C  PURPOSE: TO FETCH DATA FROM STANDARD MASTER CONDENSED
C           COLLISIONAL-DIELECTRONIC FILES.
C
C           THE FOLLOWING FILES ARE ALLOWED:
C
C              1. RECOMBINATION COEFFICIENTS
C              2. IONISATION    COEFFICIENTS
C              3. CHARGE-EXCHANGE RECOMBINATION COEFFICIENTS
C              4. RECOMBINATION-BREMSSTRAHLUNG  POWER COEFFICIENTS
C              5. CHARGE-EXCHANGE RECOMBINATION POWER COEFFICIENTS
C              6. TOTAL    LINE POWER COEFFICIENTS
C              7. SPECIFIC LINE POWER COEFFICIENTS
C
C              (NOTE: PARTIAL MASTER CONDENSED FILES SHOULD BE READ USING
C                     'XXIN15' & 'XXIN68'.
C                     IF  PARTIAL AND STANDARD FILES ARE BOTH TO BE READ
C                     USE 'XXIN15' AND 'XXIN68')
C
C  CALLING PROGRAM: GENERAL USE
C
C  DATA:
C           THE  SOURCE  DATA IS CONTAINED AS  MEMBERS  OF  PARTITIONED
C           DATA SETS AS FOLLOWS:
C
C              1. JETUID.ACD<YR>.DATA
C              2. JETUID.SCD<YR>.DATA
C              3. JETUID.CCD<YR>.DATA
C              4. JETUID.PRB<YR>.DATA
C              5. JETUID.PRC<YR>.DATA
C              5. JETUID.PLT<YR>.DATA
C              5. JETUID.PLS<YR>.DATA
C
C           WHERE <YR> DENOTES TWO INTEGERS FOR THE YEAR SELECTED.
C           IF <YR> IS BLANK THEN THE CURRENT RECOMMENDED DATA SETS ARE
C           USED
C
C           THE MEMBERS OF THE PARTITIONED DATA SETS MUST BE STANDARD
C           MASTER CONDENSED FILES AND OF THE FORM <SE>
C
C           WHERE: <SE> IS THE ONE OR TWO LETTER ION SEQUENCE CODE.
C
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C                         E.G. 'C'   OR 'HE'  ('@' = BARE-NUCLEUS)
C
C                    PARTIAL  FILES WHICH HAVE MEMBERS NAMES WITH EITHER
C                    TWO DIGITS OR A DOUBLE HASH  AFTER THEM  CANNOT  BE
C                    READ USING THIS ROUTINE (SEE 'XXIN15' & 'XXIN68')
C
C            THE  'PARTIAL'  AND 'STANDARD' MASTER CONDENSED FILES  ARE
C            SIMILAR IN FORM. A MAJOR DIFFERENCE IS THAT ADDITIONAL LINES
C            ARE  INCLUDED  AT  THE  BEGINNING  OF  THE  'PARTIAL' MASTER
C            FILES.    THE  FIRST OF THESE LINES CONTAINING A ROW OF  '='
C            SIGNS.  THIS DIFFERENCE IS USED TO MAKE SURE THAT A STANDARD
C            MASTER FILE IS BEING READ.
C
C            THE CHARACTER STRING SEPARATING THE INPUT DATA FOR EACH
C            VALUE OF Z1 IN THE FILE WILL GIVE:
C
C                       THE Z1 VALUE (Z1=) AND DATE (DATE:).
C              (OLDER DATA SETS MAY HAVE 'Z =' INSTEAD OF 'Z1=' HERE)
C
C            (NOTE: Z1 = ION CHARGE + 1 = RECOMBINING ION CHARGE)
C
C  SUBROUTINE:
C
C  INPUT : (I*4)  IUNIT   = UNIT TO WHICH INPUT DATA SET ALLOCATED
C  INPUT : (C*(*))DSNAME  = INPUT MASTER CONDENSED FILE DATA SET NAME
C  OUTPUT: (L*4)  LERROR  = .TRUE.  => ERROR DETECTED IN READING FILE
C                        = .FALSE. => NO ERROR DETECTED IN FILE
C
C  INPUT : (I*4)  NDDEN   = MAX. NUMBER OF REDUCED DENSITIES ALLOWED IN
C                          MASTER CONDENSED FILE FOR A GIVEN SEQUENCE
C  INPUT : (I*4)  NDTIN   = MAX. NO. OF REDUCED TEMPERATURES ALLOWED IN
C                          MASTER CONDENSED FILE FOR A GIVEN SEQUENCE
C  INPUT : (I*4)  NDZ1V   = MAX. NUMBER OF CHARGE STATES ALLOWED IN
C                          MASTER CONDENSED FILE FOR A GIVEN SEQUENCE
C
C  OUTPUT: (I*4)  IDE     = NUMBER OF REDUCED DENSITIES READ FROM INPUT
C                          MASTER CONDENSED FOR A GIVEN SEQUENCE
C  OUTPUT: (I*4)  ITE     = NO. OF REDUCED TEMPERATURES READ FROM INPUT
C                          MASTER CONDENSED FOR A GIVEN SEQUENCE
C  OUTPUT: (I*4)  IZE     = NO. OF CHARGE STATES GIVEN IN THE INPUT
C                          MASTER CONDENSED FOR A GIVEN SEQUENCE
C
C  OUTPUT: (R*8)  DENSR() = SET OF 'IDE' INPUT REDUCED DENSITIES (CM-3/
C                          Z1**7) READ FROM CONDENSED MASTER FILE.
C  OUTPUT: (R*8)  TR()    = SET OF 'ITE'  INPUT  REDUCED  TEMPERATURES
C                          (K/Z1**7) READ FROM CONDENSED MASTER FILE.
C  OUTPUT: (R*8)  ZIPT()  = SET OF 'IZE' INPUT CHARGE STATES READ FROM
C                          CONDENSED MASTER/METASTABLE FILE.
C                          (CHARGE STATE = ION CHARGE + 1 = RECOMBINING
C
C  OUTPUT: (L*4)  LSWIT   = .TRUE.  => IONISATION RATE COEFFICIENTS
C                                     INCLUDED IN INPUT MASTER FILE.
C                          .FALSE. => IONISATION RATE COEFFICIENTS
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C                                          NOT INCLUDED IN INPUT MASTER FILE
C  OUTPUT: (R*8)  EIA()   = IONISATION RATE COEFFICIENTS: ()=ION CHARGE
C                          UNITS: WAVE NUMBERS (CM-1)
C                          (= 0.0 IF NOT SET )
C
C  OUTPUT: (R*8)  AIPT(,,)= CONDENSED MASTER FILE DATA. COLL-DIEL COEFF.
C                          1ST DIMENSION: REDUCED DENSITY ('DENSR()')
C                          2ND DIMENSION: REDUCED TEMPERATURE ('TR()')
C                          3RD DIMENSION: CHARGE STATE ('ZIPT()')
C
C          (I*4)  I4UNIT  = FUNCTION (SEE ROUTINE SECTION BELOW)
C          (I*4)  IPOT    = NUMBER OF IONISATION RATE COEFF. VALUES
C                          PRESENT IN THE INPUT FILE.
C          (I*4)  IZ1     = CHARGE STATE READ FROM THE LINE PRECEEDING
C                          AN INPUT BLOCK FROM THE FILE.
C                          (= ION CHARGE + 1 = RECOMBINING ION CHARGE)
C          (I*4)  IBGN    = FIRST BYTE OF INTEREST IN CHARACTER 'STRING'
C          (I*4)  IEND    = LAST  BYTE OF INTEREST IN CHARACTER 'STRING'
C          (I*4)  ID      = ARRAY SUBSCRIPT USED FOR DENSITY VALUES
C          (I*4)  IT      = ARRAY SUBSCRIPT USED FOR TEMPERATURE VALUES
C          (I*4)  IZ      = ARRAY SUBSCRIPT USED FOR ION-CHARGE VALUES
C          (I*4)  I       = GENERAL USE
C
C          (C*5)  CPOT    = 'IPOT'
C          (C*80) STRING  = STRING INTO WHICH 1ST LINE OF INPUT FILE IS
C                          READ TO ENABLE ITS FORMAT TO BE ESTABLISHED.
C
C NOTE:
C          STREAM HANDLING:
C            STREAM 'IUNIT' IS USED FOR READING CONDENSED MASTER FILES
C
C ROUTINES:
C          ROUTINE    SOURCE   BRIEF DESCRIPTION
C          ------------------------------------------------------------
C          I4UNIT     ADAS     FETCH UNIT NUMBER FOR OUTPUT OF MESSAGES
C          XXREIA     ADAS     READ IN UNKNOWN NUMBER OF 'EIA' VALUES
C                              IF PRESENT.
C
C
C AUTHOR:  PAUL E. BRIDEN (TESSELLA SUPPORT SERVICES PLC)
C          K1/0/81
C          JET EXT. 4569
C
C DATE:    22/08/90
C
C DATE:    05/03/90 - PE BRIDEN - ADAS91: OPENING OF DATA SET REMOVED.
C
C UPDATE:  23/04/93 - PE BRIDEN - ADAS91: ADDED I4UNIT FUNCTION TO WRITE
C                                         STATEMENTS FOR SCREEN MESSAGES
C
C UPDATE:  24/05/93 - PE BRIDEN - ADAS91: CHANGED I4UNIT(0)-> I4UNIT(-1)
C
C UNIX-IDL PORT:
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C
C VERSION: 1.1                          DATE: 06-09-95
C MODIFIED: TIM HAMMOND (TESSELLA SUPPORT SERVICES PLC)
C               - FIRST RELEASE (NO CHANGES)
C
C VERSION  : 1.2
C DATE     : 10-04-2007
C MODIFIED : Allan Whiteford
C               - Modified documentation as part of automated
C    subroutine documentation preparation.
C
C----------------------------------------------------------------------
C----------------------------------------------------------------------
       CHARACTER*(*)      DSNAME
       INTEGER            IDE,        ITE,        IUNIT,        IZE
       INTEGER            NDDEN,      NDTIN,      NDZ1V
       LOGICAL            LERROR,     LSWIT
       REAL*8             AIPT(NDDEN,NDTIN,NDZ1V),  DENSR(NDDEN)
       REAL*8             EIA(50),    TR(NDTIN),   ZIPT(NDZ1V)
```