

## ADAS Subroutine e4spln

```
SUBROUTINE E4SPLN( ITA      , ITVAL      ,  
&                  TETA      , TEVA      ,  
&                  PZD       , PZDA      ,  
&                  LTRNG  
&                  )
```

```
C-----  
C  
C ***** FORTRAN77 SUBROUTINE: E4SPLN *****  
C  
C PURPOSE:  
C     PERFORMS CUBIC SPLINE ON LOG(TEMPERATURE <EV> ) VERSUS  
C     LOG(SCALED RADIATED POWER COEFFICIENTS).  
C     INPUT DATA FOR A GIVEN IONIZING ION COMBINATION DATA-BLOCK.  
C  
C     USING ONE-WAY SPLINES IT CALCULATES THE RADIATED POWER  
C     COEFFICIENT FOR 'ITVAL' ELECTRON TEMPERATURE VALUES FROM  
C     THE LIST OF ELECTRON TEMPERATURES READ IN FROM THE INPUT FILE  
C  
C     IF A VALUE CANNOT BE INTERPOLATED USING SPLINES IT IS  
C     EXTRAPOLATED VIA 'XXSPLE'. (SEE NOTES BELOW).  
C  
C CALLING PROGRAM: ADAS504/SPZD  
C  
C SUBROUTINE:  
C  
C INPUT : (I*4)  ITA      = INPUT DATA FILE: NUMBER OF ELECTRON TEMPERA-  
C                   TURES READ FOR THE DATA-BLOCK BEING ASSESSED  
C INPUT : (I*4)  ITVAL    = NUMBER OF ISPF ENTERED ELECTRON TEMPERATURE  
C                   VALUES FOR WHICH IOINIZATION RATE COEFFTS  
C                   ARE REQUIRED FOR TABULAR/GRAPHICAL OUTPUT.  
C  
C INPUT : (R*8)  TETA()   = INPUT DATA FILE: ELECTRON TEMPERATURES (EV)  
C                   FOR THE DATA-BLOCK BEING ASSESSED.  
C                   DIMENSION: ELECTRON TEMPERATURE INDEX  
C INPUT : (R*8)  TEVA()   = USER ENTERED: ELECTRON TEMPERATURES (EV)  
C                   DIMENSION: TEMPERATURE/DENSITY PAIR INDEX  
C  
C INPUT : (R*8)  PZD()    =INPUT DATA FILE: FULL SET OF ZERO DENSITY  
C                   RADIATED POWER COEFFTS FOR THE DATA-BLOCK  
C                   BEING ANALYSED.  
C                   1ST DIMENSION: ELECTRON TEMPERATURE INDEX  
C OUTPUT: (R*8)  PZDA()   = SPLINE INTERPOLATED OR EXTRAPOLATED ZERO  
C                   DENSITY RADIATED POWER COEFFICIENTS FOR  
C                   THE USER ENTERED ELECTRON TEMPERATURES.  
C                   DIMENSION: ELECTRON TEMPERATURE INDEX  
C  
C OUTPUT: (L*4)  LTRNG() = .TRUE.  => OUTPUT 'PZDA()' VALUE WAS INTER-  
C                   POLATED FOR THE USER ENTERED  
C                   ELECTRON TEMPERATURE 'TEVA()'.  
C                   .FALSE. => OUTPUT 'PZDA()' VALUE WAS EXTRA-  
C                   POLATED FOR THE USER ENTERED
```



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C
C ROUTINES:
C      ROUTINE      SOURCE      BRIEF DESCRIPTION
C      -----
C      XXSPLE      ADAS          SPLINE SUBROUTINE (EXTENDED DIAGNOSTICS)
C      R8FUN1      ADAS          REAL*8 FUNCTION: ( X -> X )
C
C AUTHOR:  PAUL E. BRIDEN (TESSELLA SUPPORT SERVICES PLC)
C          K1/0/37
C          JET EXT. 2620
C
C DATE:    07/06/91
C UNIX-IDL PORT:
C
C VERSION: 1.1                                DATE: 17-1-96
C MODIFIED: TIM HAMMOND (TESSELLA SUPPORT SERVICES PLC)
C          - FIRST VERSION
C
C VERSION: 1.2                                DATE: 17-1-96
C MODIFIED: TIM HAMMOND (TESSELLA SUPPORT SERVICES PLC)
C          - REMOVED SUPERFLUOUS VARIABLES AND TIDIED COMMENTS
C          SLIGHTLY
C
C -----
C
C -----
C
C      INTEGER      ITA,          ITVAL
C      LOGICAL      LTRNG(ITVAL)
C      REAL*8       PZD(ITA),    PZDA(ITVAL), TETA(ITA)
C      REAL*8       TEVA(ITVAL)

```