ADAS Subroutine r8fdip1

```
C
       REAL*8 FUNCTION R8FDIP1(E1,L1,E2,L2)
       IMPLICIT REAL*8(A-H,O-Z)
C-----------------------------------------------------------------------
C
C  ****************** FORTRAN77 FUNCTION: R8FDIP1 **********************
C
C PURPOSE: CALCULATES THE DIPOLE INTEGRAL I(KAPPA1,L1,KAPPA2,L2,1) FOR
C          WHERE MIN(E1,E2)/EMAX(E1,E2) < 0.03
C
C NOTE: CREATED BY  ALAN BURGESS FOR USE IN THE DIPOLE INTEGRAL
C       I(KAPPA1,L1,KAPPA2,L2,1) EVALUATION AS DEFINED IN PHIL.
C       TRANS. ROY. SOC. A226,255,1970, WHERE E1=KAPPA1**2 AND
C       E2=KAPPA2**2. APPLIES TO POSITIVE ELECTRON ENERGIES, .
c       THAT IS THE FREE-FREE CASE.
C
C CALLING PROGRAMS: R8FDIP
C
C INPUT:  (R*8)  E1      = KAPPA1**2 WHERE KAPPA1 IS SCALED INITIAL
C                          ELECTRON WAVE NUMBER
C INPUT:  (I*4)  L1      = ORBITAL ANGULAR OMENTUM OF INITIAL ELECTRON
C INPUT:  (R*8)  E2      = KAPPA2**2 WHERE KAPPA2 IS SCALED INITIAL
C                          ELECTRON WAVE NUMBER
C INPUT:  (I*4)  L2      = ORBITAL ANGULAR OMENTUM OF FINAL ELECTRON
C
C OUTPUT: (R*8)  R8FDIP1 = I(KAPPA1,L1,KAPPA2,L2,1)
C
C ROUTINES:
C          ROUTINE    SOURCE   BRIEF DESCRIPTION
C          ------------------------------------------------------------
C          R8FMON1    ADAS     EVALUATES MONOPOLE INTEGRAL
C
C UNIX-IDL PORT:
C
C VERSION: 1.1                          DATE: 17-04-07
C MODIFIED: HUGH SUMMERS
C               - FIRST FULLY COMMENTED RELEASE
C
C-----------------------------------------------------------------------
       IF(L1-L2)1,2,3
    1  L=L1
       A1=E1
       A2=E2
       GO TO 4
    2  R8FDIP1=0.0D0
       RETURN
    3  L=L2
       A1=E2
       A2=E1
    4  LP=L+1
       ELP=LP
       B1=DSQRT(1.0D0+ELP*ELP*A2)*R8FMON1(E1,E2,L)
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   B2=DSQRT(1.0D0+ELP*ELP*A1)*R8FMON1(E1,E2,LP)
   IF(B1*B2-1.0D-40)5,5,6
5  R8FDIP1=0.0D0
   RETURN
6  R8FDIP1=(B1-B2)/ELP
   RETURN
  END
  INTEGER             L1,           L2
  REAL*8              E1,           E2
```