

ADAS Subroutine r8giih

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FUNCTION R8GIIH ( VVE      , V      , N      , L      ,
&                L1      , LP      , ISP     , LT      ,
&                LT1     , IS      , IRES
&                )

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C ***** FORTRAN77 REAL*8 FUNCTION: R8GIIH *****

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C PURPOSE: CALCULATES BOUND-FREE G-FACTORS FOR ANGULARLY RESOLVED
 C LEVELS USES HYDROGENIC MATRIX ELEMENTS.

C

C FOR COMPLETENESS, THE UNRESOLVED, BUNDLED N, GBF (BURGESS
 C AND SUMMERS ,1976) CAN ALSO BE OBTAINED.

C

C CALLING PROGRAM: GENERAL USE

C

C FUNC : (R*8) R8GIIH = BOUND-FREE GAUNT FACTOR

C

C INPUT : (R*8) VVE = V**2*E WHERE E=(FREE ELECTRON ENERGY)/Z**2.
 C UNITS: RYD

C

C INPUT : (R*8) V = EFFECTIVE PRINCIPAL QUANTUM NUMBER OF BOUND
 C ELECTRON.

C

C INPUT : (I*4) N = PRINCIPAL QUANTUM NUMBER OF BOUND ELECTRON.

C

C INPUT : (I*4) L = ORBITAL QUANTUM NUMBER OF BOUND ELECTRON.

C

C INPUT : (I*4) L1 = ORBITAL QUANTUM NUMBER OF FREE ELECTRON.

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C INPUT : (I*4) LP = TOTAL ORBITAL ANGULAR MOMENTUM QUANTUM
 C NUMBER OF PARENT STATE.

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C INPUT : (I*4) ISP = 2*SP+1 WHERE SP IS TOTAL SPIN OF PARENT
 C STATE.

C

C INPUT : (I*4) LT = TOTAL ORBITAL ANGULAR MOMENTUM QUANTUM
 C NUMBER OF BOUND SYSTEM.

C

C INPUT : (I*4) LT1 = TOTAL ORBITAL ANGULAR MOMENTUM QUANTUM
 C NUMBER OF FREE SYSTEM.

C

C INPUT : (I*4) IS = 2*S+1 WHERE S IS TOTAL SPIN OF SYSTEM.

C

C INPUT : (I*4) IRES = LEVEL OF RESOLUTION.

C

C = 1 :

C

C = 2 : ABOVE LT1 SUM.

C

C = 3 : ABOVE LT SUM.

C

C = 4 : ABOVE S SUM.

C

C = 5 : UNRESOLVED GBF.

C

C (R*8) XN = REAL VALUE = N.

C

C (R*8) XL = REAL VALUE = L.

C

C (R*8) XL1 = REAL VALUE = L1.

C

C (R*8) XLP = REAL VALUE = LP.

C

C (R*8) XSP = REAL VALUE = ISP.

C

C (R*8) XLT = REAL VALUE = LT.

C

C (R*8) XLT1 = REAL VALUE = LT1.

C

C (R*8) XS = REAL VALUE = IS.

C

C (R*8) W =

C (R*8) ANG =
 C (R*8) CL1 =
 C (R*8) E2 = -E WHERE E=(FREE ELECTRON ENERGY)/Z**2.
 C UNITS: RYD
 C (R*8) THETH =
 C

C ROUTINES:

ROUTINE	SOURCE	BRIEF DESCRIPTION
R8WIG6	ADAS	
R8RD2F	ADAS	RETURNS HYDROGENIC BOUND-FREE RADIAL INTEGRALS.
R8GBF	ADAS	

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- FIRST VERSION. IBM VERSION NOT CHANGED

INTEGER	IRES,	IS,	ISP,	L
INTEGER	L1,	LP,	LT,	LT1
INTEGER	N			
REAL*8	V,	VVE		