

ADAS Subroutine agiidw

FUNCTION AGIIDW(VVE,V,N,L,L1,LP,ISP,LT,LT1,IS,IRESOL)
IMPLICIT REAL*8(A-H,O-Z)

```
C -----
C
C VERSION OF GIIDW FOR USE BY APHOTDW CALLED BY ADASRRC
C ***** H.P.SUMMERS, JET 30 JUNE 1992 *****
C
C PURPOSE: CALCULATES BOUND-FREE G-FACTORS USING DISTORTED WAVES,
C BURGESS-SEATON PEACH OR HYDROGENIC APPROXIMATIONS
C
C ***** H.P.SUMMERS, JET 19 AUG. 1984 *****
C MAY SELECT DISTORTED WAVE MATRIX ELEMENTS, FROM PEACH TABLES, FROM
C ORIGINAL BURGESS-SEATON APPROXIMATION OR HYDROGENIC MATRIX ELEMENTS
C USING SELECTOR IBSOPT IN THE /BSPARS/ COMMON BLOCK.
C FOR COMPLETENESS, THE UNRESOLVED, BUNDLED N, GBF (BURGESS AND SUMMERS
C ,1976) CAN ALSO BE OBTAINED.
C THE DRIVING PROGRAM MUST SET COMMON BLOCKS /PCHGTB/ AND /PCHXTB/ FOR
C USE BY FUNCTIONS PCHG AND PCHX AND SET IFIRST=IGONE=1 AT START UP.
C /PCHGTB/ DATA IS REQUIRED FROM FILE PCHGTAB.DATA ON STREAM 13
C /PCHXTB/ DATA IS REQUIRED FROM FILE PCHXTAB.DATA ON STREAM 14
C INPUT
C VVE=V**2*E WHERE E=(FREE ELECTRON ENERGY)/Z**2 (RYD)
C V=EFFECTIVE PRINCIPAL QUANTUM NUMBER OF BOUND ELECTRON
C N=PRINCIPAL QUANTUM NUMBER OF BOUND ELECTRON
C L=ORBITAL QUANTUM NUMBER OF BOUND ELECTRON
C L1=ORBITAL QUANTUM NUMBER OF FREE ELECTRON
C ISP=2*SP+1 WHERE SP IS TOTAL SPIN OF PARENT STATE
C LP=TOTAL ORBITAL ANGULAR MOMENTUM QUANTUM NUMBER OF PARENT STATE
C LT=TOTAL ORBITAL ANGULAR MOMENTUM QUANTUM NUMBER OF BOUND SYSTEM
C LT1=TOTAL ORBITAL ANGULAR MOMENTUM QUANTUM NUMBER OF FREE SYSTEM
C IS=2*S+1 WHERE S IS TOTAL SPIN OF SYSTEM
C IRESOL=1 GIVES GII((LP,SP)N L LT S, (LP,SP)E L1 LT1 S)
C =2 GIVES GII((LP,SP)N L LT S, (LP,SP)E L1 S) =ABOVE LT1 SUM
C =3 GIVES GII((LP,SP)N L S, (LP,SP)E L1 S) = ABOVE LT SUM
C =4 GIVES GII((LP,SP)N L, (LP,SP)E L1) = ABOVE S SUM
C =5 GIVES GII(N,E) = GBF (BURGESS AND SUMMERS)
C OUTPUT
C AGIIDW THE BOUND-FREE GAUNT FACTOR
C -----
C UPDATE: 01/10/96 HP SUMMERS - BYPASS PEACH DATA INPUT IF IBSOPT=3
C -----
C UNIX-IDL PORT:
C
C AUTHOR: WILLIAM OSBORN (TESSELLA SUPPORT SERVICES PLC)
C
C DATE: 4TH JULY 1996
C
C VERSION: 1.1 DATE: 04-07-96
C MODIFIED: WILLIAM OSBORN
C - FIRST VERSION.
C VERSION: 1.2 DATE: 14-10-96
C MODIFIED: WILLIAM OSBORN
```

```
C          - ADDED CHANGES DATED 01/10/96 ABOVE.
C
C VERSION: 1.3                      DATE: 16-05-07
C MODIFIED: Allan Whiteford
C          - Modified comments as part of subroutine documentation
C          procedure.
C
C-----
C-----
C          INTEGER          IRESOL,      IS,          ISP,          L
C          INTEGER          L1,          LP,          LT,          LT1
C          INTEGER          N
C          REAL*8           V,          VVE
```