

## ADAS Subroutine bornp2

SUBROUTINE BORN2 (NMAX, LLOW, LAM, LUP, MLOW, NU, MLUP, ANS, IOPT)  
IMPLICIT REAL\*8 (A-H, O-Z)

```
C-----
C  PURPOSE: SECOND STAGE OF BORN X-SECT CALCULATION WITH DIRECTIONAL
C  BEAMS CAUSING TRANSITIONS BETWEEN HYDROGEN STARK/ZEEMAN STATES.
C
C  ANGULAR INTEGRALS OF FORM ?????????????????????????????????? ARE EVALUATED
C  FOR ALL ORBITAL ANGULAR MOMENTA  0<=L<=NMAX-1
C
C  CALLING ROUTINE WITH IOPT=1 PREPARES LOOKUP TABLES. CALL WITH IOPT=2
C  RETURNS VALUES.
C
C  EVALUATE MULTIPOLES UP TO LAMMX=2
C
C  USE POINTER VECTORS FOR RAPID LOOKUP.
C
C  THE MAIN CALLING ROUTINE MUST HAVE THE LINE
C      CALL GAMAF(200)
C  BEFORE CALL TO BORN2
C
C  ***** H.P. SUMMERS, JET          17 OCT 1988          *****
C  INPUT
C      NMAX=HIGHEST N-SHELL FOR TABLE PREPARATION
C      LLOW=LOWER L FOR SELECTED TRANSITION
C      LAM=MULTIPOLE (0<=LAM<=LAMMX)
C      LUP=UPPER L FOR SELECTED TRANSITION
C      MLOW=AZIMUTHAL QUANTUM NUMBER FOR LOWER L
C      NU=MULTIPOLE AZIMUTHAL COMPONENT
C      MLUP=AZIMUTHAL QUANTUM NUMBER FOR UPPER L
C      IOPT=1  PREPARE LOOKUP STACKS (ONLY NMAX PARAMETER USED)
C      =2  SUPPLY ANSWERS FOR SPECIFIED LLOW, LAM, LUP, MLOW, NU, MLUP
C  OUTPUT
C      ANS(I)=RESULT
C-----
C
C  ADAS305 version. Developed from JETSHP.STARK.FORT (H P Summers).
C
C  VERSION   : 1.1
C  DATE      : 24-02-2005
C  MODIFIED  : Martin O'Mullane
C              - First version.
C              - Change dimensions from 200 to 500.
C
C  VERSION   : 1.2
C  DATE      : 16-05-2007
C  MODIFIED  : Allan Whiteford
C              - Updated comments as part of subroutine documentation
C              procedure.
C-----
C
C      INTEGER          IOPT,          LAM,          LLOW,          LUP
C      INTEGER          MLOW,         MLUP,         NMAX,         NU
```

REAL\*8

ANS