

ADAS Subroutine c5rlsp

```
subroutine c5rlsp( xn , xl , xml , xms ,  
&                xn1 , xl1 , xml1 , xms1 ,  
&                er , ei  
&                )
```

```
C-----  
C  
C ***** fortran77 subroutine: c5rlsp *****  
C  
C PURPOSE:  Evaluates relativistic+spin orbit matrix elements  of the  
C           form  $\langle \phi | H | \phi_1 \rangle$  for hydrogen in the nlm_lm_s individual  
C           set basis.  
C  
C CALLING PROGRAM: stark (adas305)  
C  
C SUBROUTINE:  
C  
C INPUT : (R*8)  xn    = principal quantum number (bra state)  
C INPUT : (R*8)  xl    = orbital angular momentum quantum number  
C INPUT : (R*8)  xml   = azimuthal orbital ang-mom quantum number  
C INPUT : (R*8)  xms   = azimuthal spin ang-mom quantum number  
C INPUT : (R*8)  xn1   = principal quantum number (ket state)  
C INPUT : (R*8)  xl1   = orbital angular momentum quantum number  
C INPUT : (R*8)  xml1  = azimuthal orbital ang-mom quantum number  
C INPUT : (R*8)  xms1  = azimuthal spin ang-mom quantum number  
C  
C OUTPUT: (R*8)  er    = real part of rel-spin matrix elem (Ryd)  
C OUTPUT: (R*8)  ei    = imag part of rel-spin matrix elem (Ryd)  
C  
C  
C ROUTINES:  
C     none  
C  
C AUTHOR:  Hugh Summers,  University of Strathclyde  
C         JA7.08  
C         Tel. 0141-548-4196  
C  
C DATE   : 24/01/06  
C  
C  
C VERSION : 1.1  
C DATE   : 24-01-2006  
C MODIFIED : Hugh Summers  
C         - First version.  
C-----  
REAL*8          EI,          ER,          XL,          XL1  
REAL*8          XML,        XML1,        XMS,        XMS1  
REAL*8          XN,          XN1
```