

ADAS Subroutine rqlnew

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FUNCTION RQLNEW(Z,N11,N,PHI,ZP, AMSIMP,TP,VDISP)
C
C   IMPLICIT REAL*8 (A-H,O-Z)
C
C-----
C
C ***** FORTRAN77 FUNCTION: RQLNEW *****
C-----
C   PURPOSE: EVALUATES ION IMPACT RATE COEFFICIENTS OF LODGE,
C             PERCIVAL & RICHARDS
C
C   (ALTERNATIVE TO RQLPR WITH BETTER MAXWELL AVERAGING BUT SLOWER)
C
C   ROUTINE MUST RETURN EXCITATION RATE COEFFICIENT IF N11.LT.N AND
C   DEXCITATION RATE COEFFICIENT IF N11.GT.N
C
C   NOTE THAT THE RELATION BETWEEN INVERSE PROCESSES IS DETERMINED BY THE
C   TEMPERATURE TP AND THE SPEED VDISP
C   THE TREATMENT GIVEN IS APPROXIMATE EXCEPT IN THE LIMITS VDISP=0 OR
C   VDISP >> DSQRT(2*TP/AMSIMP)
C
C   INPUT
C     Z      = TARGET ION CHARGE+1
C     N11    = PRINCIPAL QUANTUM NUMBER OF INITIAL LEVEL
C     N      = PRINCIPAL QUANTUM NUMBER OF FINAL LEVEL
C     PHI    = (IH/EIJ)F(N ---> N'')
C     ZP     = PROJECTILE CHARGE
C     AMSIMP = PROJECTILE MASS (PROTON UNITS)
C     TP     = PROJECTILE ION TEMPERATURE (K)
C     VDISP  = CONSTANT MEAN SPEED SHIFT FOR THE COLLISION (CM/SEC)
C             (DESCRIBES BEAM PLASMA SITUATIONS)
C
C   OUTPUT
C     RQLNEW = RATE COEFFICIENT (CM**3 SEC-1)
C
C ***** H.P. SUMMERS, JET                2 JUL 1991 *****
C
C   NOTES: THIS ROUTINE IS NOT YET PROPERLY ANNOTATED
C
C   UNIX-IDL PORT:
C
C   VERSION: 1.1                DATE: 16-1-96
C   MODIFIED: TIM HAMMOND (TESSELLA SUPPORT SERVICES PLC)
C             - FIRST VERSION
C
C   VERSION: 1.2                DATE: 08-02-96
C   MODIFIED: TIM HAMMOND (TESSELLA SUPPORT SERVICES PLC)
C             - REMOVED SUPERFLUOUS VARIABLES
C
C   VERSION: 1.3                DATE: 16-05-07
```

C MODIFIED: Allan Whiteford
C - Updated comments as part of subroutine documentation
C procedure.

C-----
C

INTEGER	N,	N11		
REAL*8	AMSIMP,	PHI,	TP,	VDISP
REAL*8	Z,	ZP		