

APPENDIX

Appendix-A

Programme of Lagrange's formula with Pade approximation for interpolating X_s as a function of T/T_c .

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C  XS=RATIO OF PENETRATION DEPTH
C  X=T/TC
  IMPLICIT DOUBLE PRECISION(A-H,O-Z)
  DO 10 I=1,1000
    TT=FLOAT(I)*0.093
    T=TT/93.0
    X=T
    CALL RATINT(13,X,Y)
    XS=Y
    WRITE(3,*)X,XS
10  CONTINUE
    STOP
    END

  SUBROUTINE RATINT(N,X,Y)
  IMPLICIT DOUBLE PRECISION (A-H,O-Z)
  PARAMETER (NMAX=13)
  DIMENSION XA(13),YA(13),C(NMAX),D(NMAX)
  SAVE XA,YA
C  DATA USED HAS BEEN TAKEN FROM EXPERIMENTAL
  RESULTS, Ref.1
C  YA=PENETRATION DEPTH
C  XA=T/TC
  DATA YA/1.,.99,.982,.93,.89,.845,.785,.72,
1 .615,.474,.285,.124,0./
  DATA XA/0.,.05,.1,.2,.3,.4,.5,.6,.7,.8,.9,
2 .95,1./
  DIF=ABS(X-XA(1))
  NS=1
  DO 11 I=1,N
    DIFT=ABS(X-XA(I))
    IF (DIFT.LT.DIF) THEN
      NS=I
      DIF=DIFT
    ENDIF
    C(I)=YA(I)
    D(I)=XA(I)
11  CONTINUE
  Y=YA(NS)
  NS=NS-1
  DO 13 M=1,N-1
    DO 12 I=1,N-M
      HO=XA(I)-X
      HP=XA(I+M)-X
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W=C(I+1)-D(I)
DEN=HO-HP
IF(DEN.EQ.0.)PAUSE
DEN=W/DEN
D(I)=HP*DEN
C(I)=HO*DEN
12  CONTINUE
IF (2*NS.LT.N-M)THEN
  DY=C(NS+1)
ELSE
  DY=D(NS)
  NS=NS-1
ENDIF
Y=Y+DY
13  CONTINUE
RETURN
END

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