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SUBROUTINE SKEWER(ND,N,W,F,GU,GD,SMALL,K,T,ML,MH)
C SOLVE RANK 1 OVERDETERMINED EQUATIONS WITH SKEW NORM
C INPUTS- N,W,F,GU,GD,SMALL,K.  OUTPUTS- K,T,ML,MH.
C FIND T TO MINIMIZE
C      N
C  LS  =  SUM  SKEWNORM(K,F(K)-W(K)*T)
C      K=1
C WHERE
C      SKEWNORM(K,ER) = ( GU(K)*(ER-SMALL) IF ER.GT.+SMALL      GU.GT.0
C      ( GD(K)*(ER+SMALL) IF ER.LT.-SMALL      GD.LT.0
C      ( 0. IF ABS(ER).LE.SMALL.GE.0.
C  GU,GD,W,AND F ARE REFERENCED INDIRECTLY AS W(K(I)),I=1,N  ETC
C  MINIMA WILL BE AT EQUATIONS K(ML),K(ML+1),...K(MH).
  DIMENSION W(ND),F(ND),K(ND),GU(ND),GD(ND)
  DIMENSION G(1000)
  LOW=1
  LARGE=N
  ML=N
  MH=1
  GN=0.
  GP=0.
  DO 50 ITRY=1,N
    L=K(LOW+MOD((LARGE-LOW)/3+ITRY,LARGE-LOW+1))
    IF(ABS(W(L)).EQ.0.) GO TO 50
    T=F(L)/(W(L))
    F(L)=W(L)*T
    DO 10 I=LOW,LARGE
      L=K(I)
      ER=F(L)-W(L)*T
      G(L)=0.
      IF(ER.GT.SMALL) G(L)=-W(L)*GU(L)
10    IF(ER.LT.-SMALL) G(L)=-W(L)*GD(L)
      CALL SPLIT(LOW,LARGE,K,G,MLT,MHT)
      GNT=GN
      DO 20 I=LOW,MLT
20    GNT=GNT+G(K(I))
      GPT=GP
      DO 30 I=MHT,LARGE
30    GPT=GPT+G(K(I))
      GPLX=0.
      GMIX=0.
      DO 40 I=MLT,MHT
40    L=K(I)
      IF(W(L).LT.0.) GPLX=GPLX-W(L)*GU(L)
      IF(W(L).GT.0.) GPLX=GPLX-W(L)*GD(L)
      IF(W(L).GT.0.) GMIX=GMIX-W(L)*GU(L)
      IF(W(L).LT.0.) GMIX=GMIX-W(L)*GD(L)
      GRAD=GNT+GPT
      IF((GRAD+GPLX)*(GRAD+GMIX).LT.0.) GO TO 60
      IF(GRAD.GE.0.) LOW=MHT+1
      IF(GRAD.LE.0.) LARGE=MLT-1
      IF(LOW.GT.LARGE) GO TO 60
      IF(GRAD.GE.0.) GN=GNT+GMIX
      IF(GRAD.LE.0.) GP=GPT+GPLX
      IF((GRAD+GPLX).EQ.0.) ML=MLT
      IF((GRAD+GMIX).EQ.0.) MH=MHT
50  CONTINUE

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