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IF(ABS(P(J)) .LE. 1.0E-5) P(J)=1.0134E-6
V(J)=VN
Q(J)=QA
IF(TLIMA(J).GE.TLIMB) GO TO 129
JCRIT=J
TLIMB=TLIMA(J)
129 IF(P(J)+Q(J).LE.PPEAK) GO TO 131
PPEAK=(P(J)+Q(J))
C "JPMAX" IS THE VALUE OF J FOR WHICH PPEAK TAKES ITS MAXIMUM VALUE.
JPMAX=J
131 J=J+1
J1=J+1
JT=J1+1
C "JSTAR" IS A VALUE OF J AHEAD OF THE WAVE FRONT AT WHICH COMPUTING
C STOPS PREPARATORY TO ADVANCING TIME BY ANOTHER INCREMENT. JSTAR
C IS ADVANCED BY UNITY WHENEVER PARTICLE VELOCITY, U(JSTAR),
C BECOMES NON-NEGLIGIBLE.
IF(J.LE.JSTAR+1) GO TO 70
C-----TEST TO ADVANCE JSTAR
IF(ABS(U(JSTAR+1)).GT.1.0E-5) JSTAR=JSTAR+1
IF((CYCLE.EQ.CYCLES).OR.(TIMES.GE.TQUIT).OR.(J.EQ.JQUIT))GO TO 169
IF(CYCLE.GT.10)COUNTS=20
C TO CHANGE FREQUENCY OF PRINT-OUT, A STATEMENT CAN BE INSERTED
C HERE: "IF (CYCLE.GT. K) COUNTS=MN" WHERE "K" AND "MN" ARE
C INTEGERS TO BE CHOSEN BY THE PROGRAMMER.
IF(MOD(CYCLE,COUNTS).NE.0) GO TO 180
GO TO 170
169 LAST=1
170 JPB=1
JPE=JSTAR+2
CALL WRITE
180 DTNH1=0.6*TLIMB
IF(DTNH1/DELT.GT.1.1) DTNH1=1.1*DELT
IF(DTNH1.GT.DTMX) DTNH1=DTMX
DTN=DELT
DELT=DTNH1
DELT I=DTN+DELT
GO TO 40
C
951 FORMAT(1H1,6X,3HALP,9X,4HDELT,11X,4HDTMX,11X,4HCONA,12X,2HCQ/7X,I1
-,4F15.6)
957 FORMAT(1H0,8X,2HS1,5X,8HBURN( ).. /8X,I2,9X,9I5/2X)
961 FORMAT(1H0,5X,3HTAU,16X,5HLEFTP,14X,4HU(1),15X,6HOPTION/3E19.8,I8)
END
SUBROUTINE DECIDE
C
COMMON /C1ZON/ H(9),BURN(9),L(9),DX(9),S1,RHO(9)
COMMON /C2TIME/ TIMES,CYCLE,DELT,DTN,DTMX,TLIMA(300),JCRIT,
1 TQUIT,TAU
COMMON /C3CTRL/ COUNTS,JSTAR,JPE,JPB,JQUIT,LAST,CYCLES
COMMON /C4FLOW/ U(300),V(300),X(300),Q(300),P(300),E(300),QA,VN,
1 MASS(300),CSP(300)
COMMON /C7GNRL/ ALP,OPTION,CONA,CQ,LEFTP
DIMENSION ZON(9)
C

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INTEGER H,BURN,S,S1,ZON,CYCLE,COUNTS,CYCLES,ALP,OPTION,H2,HS1,HS,
1 BURNS,HS2
REAL L,MASS,LINEAR,LEFTP
C
C CHOOSE GEOMETRY. ALP IS AN INTEGER LABEL WHICH IS TO BE SET
C ACCORDING TO THE GEOMETRY OF THE PROBLEM.
C X IS THE EULERIAN SPACE COORDINATE. THE INITIAL VALUE AT T=0
C OF THE LEFT BOUNDARY OF CELL 1 IS SET HERE. THE POSITIONS OF
C OTHER CELL BOUNDARIES ARE CALCULATED IN MAIN FROM THE NUMBER OF
C ZONES AND THE DIMENSIONS OF THE PROBLEM.
C FOR CYLINDRICAL AND SPHERICAL PROBLEMS, LEFT BOUNDARY IS
C INTERPRETED AS INNER BOUNDARY.
C     ALP = 1 FOR PLANE GEOMETRY
C     ALP = 2 FOR CYLENDRICAL GEOMETRY
C     ALP = 3 FOR SPHERICAL GEOMETRY
C
C     ALP=1
C-----CHOOSE COORDINATES OF FIRST CELL
C     X(1)=0.0
C-----NUMBER OF REGIONS PLUS ONE (NOT TO EXCEED 9)
C THIS PROGRAM CAN BE RUN WITH SEVERAL REGIONS OF DIFFERENT
C MATERIALS. THE NUMBER OF SUCH REGIONS IS DENOTED BY AN INTEGER
C S1-1. THIS PECULIAR CONVENTION ARISES BECAUSE OF A CHARACTERISTIC
C OF FORTRAN--ZERO INDICES ARE NOT ALLOWED. EACH DISTINCT REGION IS
C DENOTED BY AN INTEGER LABEL S. S=2 IS THE LEFT-MOST REGION, S=3
C THE NEXT TO THE RIGHT, ETC. UP TO S1.
C EACH REGION IS DIVIDED INTO A NUMBER OF SPACE ZONES OR CELLS,
C ZON(S). THE NUMBER OF CELLS UP TO AND INCLUDING REGION S
C (STARTING WITH THE LEFTMOST REGION) IS H(S)=SUM(ZON(K)),
C K=2 TO S, INCLUSIVE.
C     S1=2
C-----MATERIAL IN REGIONS
C "BURN(S)" IS AN INTEGER LABEL WHICH DEFINES THE MATERIAL OF
C REGION S.
C     BURN(S) = 1 FOR EXPLOSIVE
C     BURN(S) = 2 FOR VOID
C     BURN(S) = 3 FOR LIQUID
C     BURN(S) = 4 FOR SOLID
C     BURN(S) = 5 FOR PHASE TRANSITION
C     BURN(2)=5
C-----SET OPTION
C "OPTION" IS AN INTEGER LABEL WHICH DESCRIBES THE TYPE OF PROBLEM
C TO BE SOLVED. IF OPTION=1,2, OR 3, THE PROBLEM IS ONE IN WHICH
C A SPECIFIED PRESSURE IS APPLIED TO THE LEFT HAND BOUNDARY. IF
C OPTION=5, AN EXPLOSIVE REGION IS INCLUDED AND ITS DETONATION
C PROVIDES THE DRIVING FORCE. OPTION=6 MEANS THAT THE FIRST REGION
C (S=2) IS A FLYER PLATE WHICH HAS JUST COLLIDED WITH THE SECOND
C REGION (S=3) AT THE START OF THE PROBLEM. WHEN THIS HAPPENS,
C EACH CELL IN REGION 1 (S=2) IS GIVEN THE FLYER PLATE VELOCITY
C U(1), EXCEPT THE ONE ADJACENT TO REGION 2(S=3) THIS CELL AND THE
C FIRST CELL IN REGION 2 (S=3) ARE GIVEN VELJCITIES U(1)/2 FOR
C SMOOTHING PURPOSES. WHEN OPTION=1, THE TIME DURATION, TAU, OF
C THE APPLIED PRESSURE MUST BE SET. FOR A CONSTANT PRESSURE APPLIED
C AT T=0, SET TAU EQUAL TO A LARGE NUMBER, SAY 500 (MICROSECONDS).
C FOR OPTION=2, TIME TAU IS THE TIME AT WHICH THE APPLIED PRESSURE
C EQUALS ZERO IN A LINEAR RAMP. OPTION=3 HAS A BUILT-IN TIME

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