

PROGRAM LUMP2

```
*****
* Lumps an x-ordered x-y-z file. From standard input it reads:      *
* input file name                                                    *
* MIN MAX INC                                                         *
* MIN, MAX and INC are the minimum, maximum and incremental value of x.*
* The resulting x y z file flushed to standard output.              *
* It lumps data-points in the new intervals with weighted averages   *
* over x, y and z. Points that fall outside the available data-set are *
* omitted. If the new grid is actually smaller than the original one *
* or if some datapoints are missing, a linear interpolation is made  *
* between the two neighboring original data-points.                  *
*****
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```
parameter(nphys=100000)
real eps,sx,sy,sz,x,y,z,t,xx(nphys),yy(nphys),zz(nphys)
*   ,xmx,xmn,xlast,xnext,ylast,ynext,zlast,znext
*   ,wlow,whigh,tmn,tmx,tsp
CHARACTER*40 flin
INTEGER I,J,n,mm,ilast
```

```
read(*,'(a40)') flin
read(*,*) tmn,tmx,tsp
open(23,FILE=flin)
mm=100000
xmx=-1e20
xmn=1e20
do 10 i=1,mm
  READ(23,*,END=11) xx(i),yy(i),zz(i)
  if (xx(i).lt.xmn) xmn=xx(i)
  if (xx(i).gt.xmx) xmx=xx(i)
10  continue
11  mm=i-1
    close(23)
```

```
*****sort with respect to x-value
call SORT2(mm,xx,yy)
call SORT2(mm,xx,zz)
```

```
*****lump to tsp intervals
*****assume that the x-values are ordered
```

```
  j=0
  ilast=1
  eps=1e-8
  do 31 t=tmn,tmx-tsp+eps,tsp
    sy=0
    sz=0
    n=0
    sx=0
    do 20 i=ilast,mm
  if (xx(i).lt.tmn) goto 20
    if (xx(i).gt.(t+tsp)) goto 21
    sy=sy+yy(i)
    sz=sz+zz(i)
    sx=sx+xx(i)
    n=n+1
20  continue
21  ilast=i
    j=j+1
```

```

if (n.eq.0) then
***** first omit all points that are outside interval
      if ((t.lt.xmn).or.(t.gt.xmx)) then
          goto 31
***** otherwise take appropriate weighted average between
***** last point and first subsequent point
      else
          xlast=xx(ilast-1)
          xnext=xx(ilast)
          ylast=yy(ilast-1)
          ynext=yy(ilast)
          zlast=zz(ilast-1)
          znext=zz(ilast)
          whigh=(t-xlast)/(xnext-xlast)
          wlow=1.-whigh
          x=xlast*wlow+xnext*whigh
          y=ylast*wlow+ynext*whigh
          z=zlast*wlow+znext*whigh
      endif
      else
          z=sz/real(n)
          y=sy/real(n)
          x=sx/real(n)
      endif
      write(*,*) x,y,z
31 continue
end

```

```

SUBROUTINE SORT2(N,RA,RB)
DIMENSION RA(N),RB(N)
L=N/2+1
IR=N
10 CONTINUE
  IF(L.GT.1)THEN
    L=L-1
    RRA=RA(L)
    RRB=RB(L)
  ELSE
    RRA=RA(IR)
    RRB=RB(IR)
    RA(IR)=RA(1)
    RB(IR)=RB(1)
    IR=IR-1
    IF(IR.EQ.1)THEN
      RA(1)=RRA
      RB(1)=RRB
      RETURN
    ENDIF
  ENDIF
  I=L
  J=L+L
20 IF(J.LE.IR)THEN
  IF(J.LT.IR)THEN
    IF(RA(J).LT.RA(J+1))J=J+1
  ENDIF
  IF(RRA.LT.RA(J))THEN
    RA(I)=RA(J)

```

```
    RB(I)=RB(J)
    I=J
    J=J+J
ELSE
    J=IR+1
ENDIF
GO TO 20
ENDIF
RA(I)=RRA
RB(I)=RRB
GO TO 10
END
```