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PROGRAM psdl2e
*****
* Conversion of psi and delta to dielectric function .
* from standard input provide:
* input file name
* angle of incidence in degrees
* the input file must have the format x psi delta
* The outputfile comes as: x epsilon1 epsilon2
*****
REAL X(100000),psi,del,teta,sn1,sn2,tn2,cs2,pi
complex eps,rps(100000)
INTEGER I,mm
character*40 flin
read(*,'(a40)') flin
open(23,file=flin)
mm=100000
read(*,*) teta
pi=4.*atan(1.)
teta=teta*pi/180
sn1=sin(teta)
sn2=sn1**2
cs2=1.-sn2
tn2=sn2/cs2
cs1=sqrt(cs2)
do 10 i=1,mm
  READ(23,*,END=11) X(i),psi,del
  rps(i)=tan(psi)*cexp(cmplx(0,del))
10 continue
11 mm=i-1
close(23)
do 25 i=1,mm
  eps=sn2*(1.+tn2*((1-rps(i))/(1+rps(i)))**2)
  write(*,*) x(i),real(eps),aimag(eps)
25 continue
END

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