
Subject: Legenders polynomial

Posted by [Baro](#) on Mon, 11 Jun 2012 19:06:10 GMT

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Dear All,

I was trying to compute the legender function. I wrote the code as shown below. But it is not working right. could you help. Thank you in advance

PRO legenders_function,theta,lmax

;Give the IDL compiler information that changes some of the default rules

COMPILE_OPT idl2, HIDDEN

; Error handling.

```
;      CATCH, theError
;      IF theError NE 0 THEN BEGIN
;          Catch, /CANCEL
;          void = ERROR_MESSAGE()
;          RETURN
;      ENDIF
```

;declare global variables

COMMON MYGLOBAL,alm,blm

;set maximum degree,i.e lmax

lmax = 60

;initialization legenders function factors

m = fltarr(lmax+1)

l = fltarr(lmax+1)

X = replicate(0.0,lmax+1, lmax+1)

alm = replicate(0.0,lmax+1, lmax+1)

blm = replicate(0.0,lmax+1, lmax+1)

alm[2,2] = sqrt(3)

;compute the legenders function factors

IF size(alm[*],0)/dimensions)LT lmax+1 THEN BEGIN

FOR l=2,lmax-1 DO BEGIN

alm[l+1,l+1] = sqrt((2.0*l+1.0)/(2.0*l))

ENDFOR

FOR m=0,lmax-1 DO BEGIN

FOR l=m+1,lmax-1 DO BEGIN

X=(2.0*l+1.0)/((l+m)*(l-m))

alm = sqrt(X*(2.0*l-1.0))

blm = sqrt(X*(l-m-1.0)*(l+m-1.0)/(2.0*l-3.0))

ENDFOR

ENDFOR

ENDIF

```

; set the values of theta in radian
cosTheta = cos(3)
sinTheta = sin(3)
;initialization of legenders function
Plm = replicate(0.0,lmax+1, lmax+1)
Plm[1,1] = 1.0
;compute the legenders function values
FOR l=0,lmax-1 DO BEGIN
    Plm[l+1,l+1] = alm[l+1,l+1]*sinTheta*Plm[l,l]
ENDFOR

FOR m=0,lmax-1 DO BEGIN
    Plm[m+2,m+1] = alm[m+2,m+1]*cosTheta*Plm[m+1,m+1]
ENDFOR

FOR m=0,lmax-1 DO BEGIN
    FOR l=m+2,lmax DO BEGIN
        Plm[l+1,m+1] = alm[l+1,m+1]*cosTheta*Plm[l,m+1]-blm[l+1,m+1]*Plm[l-1,m+1]
    ENDFOR
ENDFOR
print,'program completed'
END

--http://compgroups.net/comp.lang.idl-pvwave/

```
