Subject: Re: Using 1D FFT to decompose the provided hurricane data in terms of wavenumbers.
Posted by Burch on Thu, 05 Mar 2015 15:32:21 GMT
View Forum Message <> Reply to Message

On Wednesday, March 4, 2015 at 5:11:01 PM UTC-6, twie...@fiu.edu wrote:
> I have 240x240 array of hurricane wind speed.
>
> 1) I need to covert to polar coordinates and plot the speed on a contour map with a radius of [-108,108], however what I have doesn't appear to be correct.

> Theta=atan(Y/X)*2*!PI

Calculating theta in this way will give you incorrect results. For instance, notice that

```
IDL> y = 1.0/2.0
IDL> x = -1.0/2.0
IDL> print, atan(y/x)
   -0.785398
```

and

```
IDL> y = -1.0/2.0
IDL> x = 1.0/2.0
IDL> print, atan(y/x)
   -0.785398
```

give the same result even though the locations are in different quadrants! You should use the two argument form of atan()

```
Theta = atan(y, x)
```

This will give you results ranging from -pi to pi. To change to 0 to 2 pi do

```
Theta = (theta + 2.0*!pi) mod (2.0*!pi)
```

-Jeff