Subject: Re: Range of "Spherical Coordinates" in SPHER_HARM
Posted by Kenneth P. Bowman on Thu, 09 Oct 2008 13:22:51 GMT
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In article <gcku0s$4t1$1@aioe.org>,
"Karlo Janos" <idl.20.beamer2@spamgourmet.com> wrote:

> Hello all!
>
> I am a little bit confused about the usage of spherical coordinates in
> the function SPHER_HARM.
> The first parameter should be the azimuthal angle theta (in the help
> document named 'polar' or 'colatitudinal') and the second parameter the
> polar angle phi (in the help document named 'azimuthal' or
> 'longitudinal').
> According to the example code at the end of the help page the range for
> theta seems to be [0; pi] as I would have presumed. But what is the
> range for phi? [0; 2pi] or [-pi; pi]? In some functions (where the
> keyword '/DEGREES' is possible) it must be the latter, relating to the
> coordinate system of the earth. But what about SPHER_HARM? I did not
> find any explanation about the definition of theta and phi there.
> Does anybody see clearly here?
> Greets
>
> Karlo

Spherical harmonics are simply sines and cosines in the azimuthal
(longitudinal) direction, so it does not matter whether you
use [0, 2 pi] or [-pi, pi]. Use whichever convention you want, but be
consistent or you will end up with phase errors.

And, as is usually the case with IDL, the easiest approach is to
try it and see if you get what you want.

Ken Bowman