Subject: Re: Range of "Spherical Coordinates" in SPHER_HARM
Posted by jameskuyper on Sun, 12 Oct 2008 18:45:34 GMT
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Karlo Janos wrote:
> Thanks for your comments!
> My confusion was caused by the contradictory statements about theta and
> phi.

What contradiction do you see within those statements?

> ... In my opinion/definition theta is the azimuthal angle (and _not_
> 'colatitudinal' as stated in the help document) and phi is the polar
> angle (and _not_ 'longitudinal').

That may be your opinion; but the definitions of theta and phi are fundamentally arbitrary. There are conventions, of course, but different conventions are followed by different groups.

I've got about 100 advanced math and physics books in my library. I just did a quick survey of them, and 9 of them mention spherical coordinates or spherical harmonics in the index. Here's my results:

Theta is azimuthal, phi is polar:
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"Mathematical Analysis" - Apostol

Theta is polar, phi is azimuthal:
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"Special Functions and their applications" - Lebedev
"Mathematical Methosds for Physicists" - Arfken
"Large Scale Structure of Spacetime" - Hawking & Ellis
"General Relativitiy" - Wald
"The Structure of Matter" - Gasiorowicz
"Quantum Mechanics" - Metzbacher
"Quantum Mechanics" - Messiah
"Gravitation" - Misner, Thorne, Wheeler
"Classical Electrodynamics" - Jackson
"Classical Electromagnetic Radiation" - Marion

You may work in a field where different conventions hold, but the convention used by SPHER_HARM is at the very least a widely used convention.