Subject: Re: TOA (Time of Arrival)
Posted by Craig Markwardt on Tue, 17 Apr 2012 12:25:10 GMT
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On Tuesday, April 17, 2012 4:30:07 AM UTC-4, bongjae kuk wrote:
> Hello Friends..
>
> I am looking for the existing routine or any comment for time of
> arrical equation.
>
> If we know information(latitude, longitude, height, time) of site1 ,
> site2, site3, and site4 then we can calculate unknown latitude,
> longitude, height, time of radiation source using TOA(Time of Arrival)
> equation with speed of light(constant).
>
> Would you comment it? and any respose is appreciated!

Yes, it can be done with IDL. I'm not aware of any existing public routines for this though.

You probably want to rephrase the problem as a least squares problem. For a given set of input parameters (you list them), your model would compute the arrival time for each station. It's a simple matter of some dot products. :-) Then vary the parameters until you get a good fit to the arrival time data.

You probably want to work in 3D cartesian space. There's a question of whether you use earth body-fixed coordinate system or earth centered inertial (ECI) (i.e. does the coordinate system rotate with the earth or is it fixed to the stars). It depends on whether you expect your source to be astrophysical, solar system, or local orbit. Local can use earth-fixed, otherwise convert to ECI.

Craig

Subject: Re: TOA (Time of Arrival)
Posted by Phillip Bitzer on Tue, 17 Apr 2012 14:43:55 GMT
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And in fact, I use Craig's mpfit routine to just such a TOA analysis.