Subject: Re: How to plot the magnetic field vector along the trajectory
Posted by lasse on Wed, 12 Mar 2008 11:27:05 GMT
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On 12 Mar, 12:06, "dux...@gmail.com" <dux...@gmail.com> wrote:
> I cannot connect to the web site you gave me.
> Sorry for my poor English and I did not state my question clearly.
>
> http://picasaweb.google.com/duxiyu/1/photo#51768046173768035 86
> Could you browse this web page? There is a sample figure.
>
> I have the position data of the satellite and the magnetic field data
> for each position.
> For example, (posx, posy, posz) is the position of satellit and the
> magneitc field data for this position is (Bx, By, Bz).
> Firstly I plot the projection of the satellite trajectory in X-Y plane
> by using "plot, posx, posy"
> Then I want to plot the vector of magnetic field data for each point
>
> Du
>
> On Mar 12, 11:26 am, David Fanning <n...@dfanning.com> wrote:
>
>> dux...@gmail.com writes:
>>> I have the magnetic field data and spacecraft position data.
>>> I want to plot the magnetic field vector along the trajectory.
>>> I think I should first plot the spacecraft trajectory, and then plot
>>> the magnetic field vector along the trajectory.
>>> But I do not know which procedure in IDL can perform the second step.
>>> Is there anyone who can can help me?
>
>> I've been thinking lately that either we need a refresher
>> course in how to ask technical questions, or my mind is going
>> blank faster than I anticipated. Neither prospect is
>> encouraging to me.
>
>> Here is a good place to start if you need a refresher:
>
>> http://catb.org/~esr/faqs/smart-questions.html
>
>> The section on "Be Explicit About Your Question" might
>> be a good place to start, if you are short on time.
>
>> If you think my mind is going, then join the line. :-(
>
>> Cheers,
>
>> David

>
>> P.S. With respect to *this* question, I'm not sure I
>> even know which IDL procedure performs the *first* step.
>
>> --
>> David Fanning, Ph.D.
>> Fanning Software Consulting, Inc.
>> Coyote's Guide to IDL Programming:http://www.dfanning.com/
>> Sepore ma de ni thui. ("Perhaps thou speakest truth.")

I found the question perfectly straight forward already from the first post. Maybe it's to do with the fact that I fiddle with spacecraft trajectories and magnetic fields every day. Or maybe I'm just in a better mood than David...

Anyway, the way I would do this is:

```
nn = n_elements(posx)
plot, posx, posy
for i=0, nn-1L do $
  plots, posx[i]+[0., Bx[i]], posy+[0., By[i]]
```

So essentially you draw every field vector starting at the current point of the trajectory to the projected magnitude of the vector. You might want to introduce some sort of scaling factor get the magnetic field vectors nicely in the coordinate system. Also, this only works if all 6 components have the same time stamps.

Instead of PLOTS you might want to have a look at ARROW to get nice arrows as in your example, like so

```
arrow, posx[i], posy[i], posx[i]+bx[i], posy[i]+by[i]
```

Cheers
Lasse
