



Jason Byrne <jbyrne6@gmail.com>

Ugh

5 messages

Peter Schuck <peter.schuck@nrl.navy.mil>**12 February 2008 12:45**

Reply-To: peter.schuck@nrl.navy.mil

To: Jason Byrne <jbyrne6@gmail.com>

Hi Jason,

Sorry for the long time between emails but I got tied up in a couple of other projects.

Anyway after I get this review out the door today I hope to have my decks clear to

give you my full attention for a few days. I will get you a copy of my talk from AGU and

the paper by tomorrow evening --- I promise. What is your status on computing the uncertainties in the HT plots?

-- Pete

--

Pete Schuck

Plasma Physics Division, Code 6794

Naval Research Lab

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For the materialist, science is what teaches us what to believe. For the empiricist, science is more nearly what teaches us how to give up our beliefs. --- Bas van Fraassen

Jason Byrne <jbyrne6@gmail.com>**12 February 2008 14:59**

To: peter.schuck@nrl.navy.mil

Hi Pete,

Thanks a million for the email. I hadn't expected to hear from you until you come over to work with us; I presume you are still hoping to come?

I've been happy enough for now with the height time plots. I worked through the data to eradicate any points of chance variation I found

in the processes leading to the plots, so I've attached two of the most recent versions (CDAW overplotted in heights).
With regard to smoothing, I didn't attempt anything past a simple boxcar which isn't effective due to the nonlinear spacing of the images and C2/C3 overlap. I've not tried harder, as it was felt we should get this paper I'm currently writing submitted asap as a methods based publication and initial results, with future intensive analysis of the CME kinematics in mind. To have error bars which show a deviation from CDAW esp. in later C3 is a nice small first result I think - I hope! Then it will be great for myself and two the other students to work with you on refining aspects of error plots.
Meanwhile, I certainly look forward to seeing your talk or further comments.
Thanks,
Jason.

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4 attachments



20000102_kins.pdf
57K



20000118_kins_incl_cdaw.pdf
64K



plot_incl_cdaw_20000418.pdf
79K



plot_incl_cdaw_20010423.pdf
79K

Peter Schuck <peter.schuck@nrl.navy.mil>

12 February 2008 15:37

Reply-To: peter.schuck@nrl.navy.mil

To: Jason Byrne <jbyrne6@gmail.com>

Cc: Peter Gallagher <peter.gallagher@tcd.ie>

Jason Byrne wrote:

> Hi Pete,

>

> Thanks a million for the email. I hadn't expected to hear from you
> until you come over to work with us; I presume you are still hoping to
> come?

>

Yep, although my visit will probably have to belate March or early April as it takes

6-8 weeks to process Foreign travel for the Navy.... which reminds me I need to send Peter a draft invitation letter for him to send back to me.

> I've been happy enough for now with the height time plots. I worked
> through the data to eradicate any points of chance variation I found
> in the processes leading to the plots, so I've attached two of the
> most recent versions (CDAW overplotted in heights).

>

They look pretty good.

> With regard to smoothing, I didn't attempt anything past a simple
> boxcar which isn't effective due to the nonlinear spacing of the
> images and C2/C3 overlap.

Yes spacing is an issue. I have a solution we can discuss when I visit.
It's fairly complicated but I think if we sit down and spend a few days
together you'll be able to run with it.

> I've not tried harder, as it was felt we
> should get this paper I'm currently writing submitted asap as a
> methods based publication and initial results, with future intensive
> analysis of the CME kinematics in mind.

Good!

> To have error bars which show
> a deviation from CDAW esp. in later C3 is a nice small first result I
> think - I hope! Then it will be great for myself and two the other
> students to work with you on refining aspects of error plots.
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You never described how you estimate your errors in velocity in
acceleration.

You might try this:

You have uncertainty estimates for your height measurements right?
So here is a recipe for estimating statistical confidence intervals:

[1] Assume the errors are distributed according to some standard
distribution.

Gaussian errors are reasonable unless you have good evidence otherwise.
If you have enough points (which we usually don't) you can bootstrap the
distribution, but we can talk about this when I visit.

[2] Perturb your HT data according to this distribution -- use perhaps
10,000 realizations. Recompute the velocity and acceleration. Store ALL
of the velocity and acceleration estimates at EACH point.

[3] Now SORT the velocity and accelerations at EACH point. Take the
inner 68% (or 95%) at each point. For example, if you are using 68%
confidence intervals the residual would be $1 - 0.68 = 32\%$. Divide this by
two $32/2 = 16\%$. This number gives you the locations in your SORTED arrays
of your upper and lower confidence intervals.

For 10,000 realizations this would be:

$i1 = 10000 * 0.16 = 1600$

$i2 = 10000 * (1 - 0.16) = 8400$

The values of the accelerations at these locations should give you
Monte-Carlo estimates of the 68% percent confidence intervals. NOTE!!!
these confidence intervals will NOT be symmetric!

you can use a program like ERRPLOT in solarsoft to make two-sided error
bars.

<http://www.astro.washington.edu/deutsch-bin/getpro/library32.html?ERRPLOT>

This approach is fairly simple and can be accommodated within

estimation paradigm you have chosen, i.e. it won't require that you change the way you estimate velocity and acceleration.

Cheers,

-- Pete

> Thanks,
>

> Jason.
>

> On 12/02/2008, Peter Schuck <peter.schuck@nrl.navy.mil> wrote:

>
>> Hi Jason,
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>> Sorry for the long time between emails but I got tied up in a couple of
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>> our beliefs. --- Bas van Fraassen

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Peter Gallagher <peter.gallagher@tcd.ie>**13 February 2008 09:32**

To: Jason Byrne <jbyrne6@gmail.com>

... could you just CC me on all correspondence with Pete? Helps me keep up with discussion.

The bootstrapping idea is just a well-known Monte-Carlo simulation. Pretty easy to implement to be honest.

We should talk about it at some point later in the week.

PG

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Jason Byrne <jbyrne6@gmail.com>**30 June 2009 15:33**

To: Shane Maloney <shane.maloney98@gmail.com>

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