Jason Byrne <jbyrne6@gmail.com>

Error propagation

5 messages

Jason Byrne <jbyrne6@gmail.com> **8 January 2008 13:18**
To: Peter Gallagher <peter.gallagher@tcd.ie>

Peter,

You wrote down that you thought my velocity (and accel.) errors could be gotten by

delta_v = v * (delta_h / h + delta_t / t)

but this means the velocity errors are inversely proportional to the height which doesn't seem right to me.

Any ideas?

Peter Gallagher <peter.gallagher@tcd.ie> **8 January 2008 14:15**
To: Jason Byrne <jbyrne6@gmail.com>

... yep, you do have a point there. Although you are correct in saying that dv ~ 1/h, the error in the velocity is actually proportional to the fractional error in h, which is given by dh/h. Need to think about this a bit more.

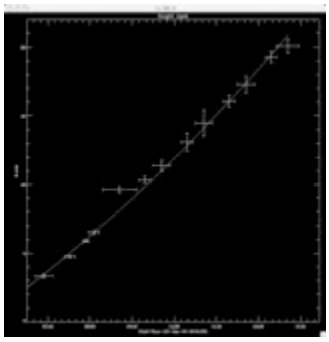
PG

Peter Gallagher PhD
www.SolarMonitor.org
Astrophysics Research Group
School of Physics
Trinity College Dublin
Dublin 2
Ireland
W: www.physics.tcd.ie/astrophysics
T: +353 (0)1 896 1300
F: +353 (0)1 671 1759
Skype: petertgallagher
[Quoted text hidden]

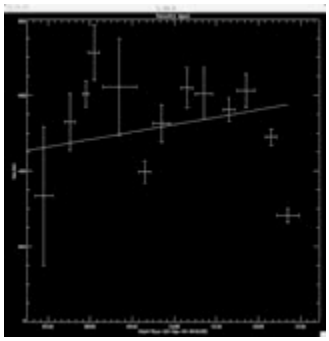
Jason Byrne <jbyrne6@gmail.com> **8 January 2008 14:35**
To: Peter Gallagher <peter.gallagher@tcd.ie>

Ok, for the given height-time it produces this unattractive graph for velocity...
[Quoted text hidden]

2 attachments



height_fit.tiff
34K



Vel_fit.tiff
36K

Peter Gallagher <peter.gallagher@tcd.ie> **8 January 2008 14:49**
To: Jason Byrne <jbyrne6@gmail.com>

... those errors look ok, but the scatter is still terrible in velocity.

Is the h data still smoothed before taking the derivative?

Peter Gallagher PhD
www.SolarMonitor.org
Astrophysics Research Group
School of Physics
Trinity College Dublin
Dublin 2
Ireland
W: www.physics.tcd.ie/astrophysics
T: +353 (0)1 896 1300
F: +353 (0)1 671 1759
Skype: petertgallagher

[Quoted text hidden]

> [Quoted text hidden]
> <height_fit.tiff><Vel_fit.tiff>

Jason Byrne <jbyrne6@gmail.com> **8 January 2008 14:57**
To: Peter Gallagher <peter.gallagher@tcd.ie>

No, I took out the smoothing. It's just v=deriv(t,h). I don't understand how other papers get out their kinematics if this is presenting such difficulties for me!
And I don't see why the velocity errors don't have some resemblance to the height errors (e.g. the first point), which was why I questioned the equation proportionalities.

[Quoted text hidden]
