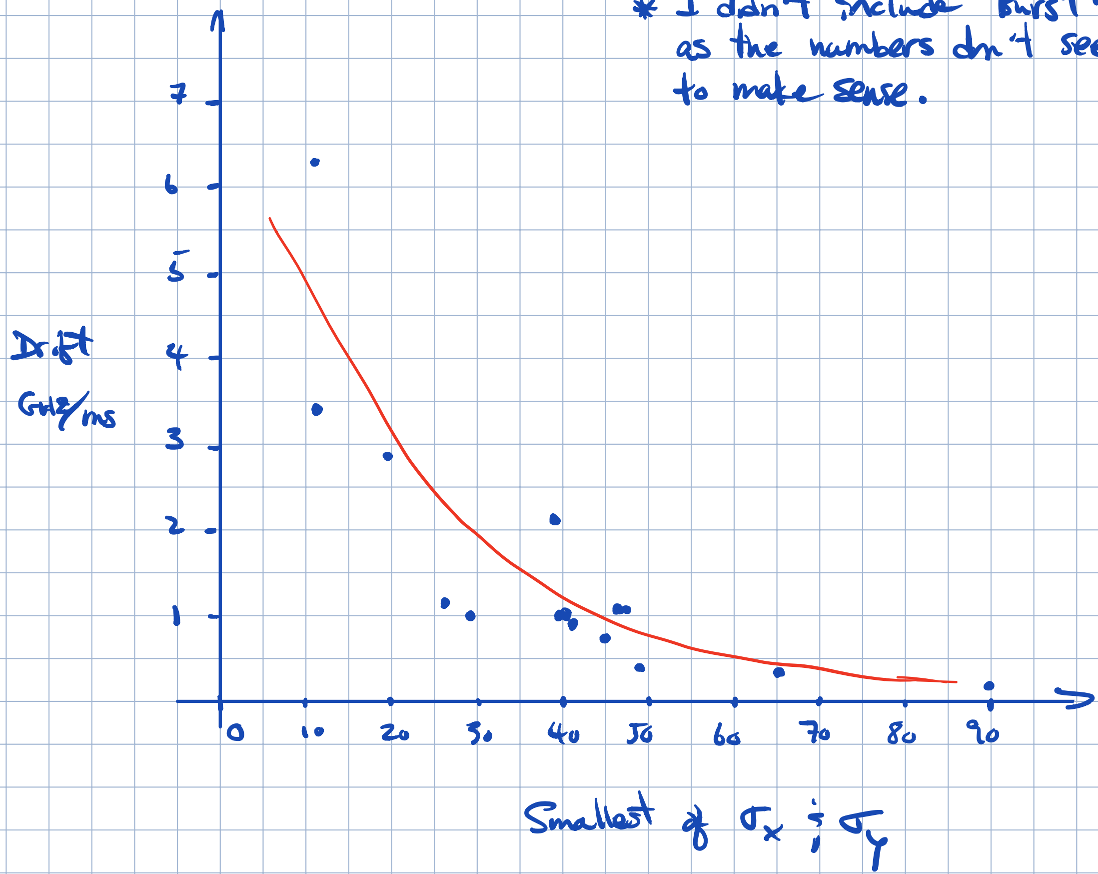
Drift vs Burst width

Michilli data

* I didn't include Burst #10 as the numbers don't seem to make sense.

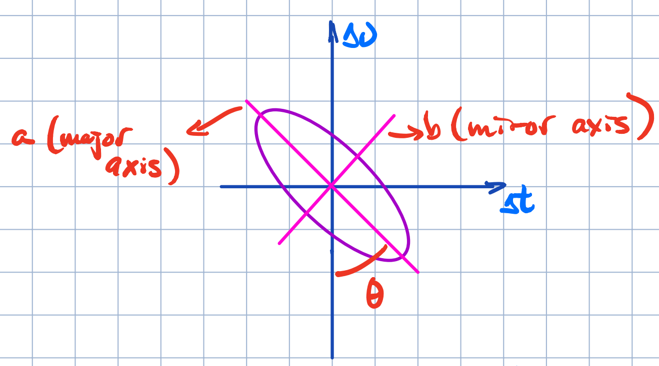


- This is the behaviour we expect since

$$\frac{d\nu_{obs}}{dt_{obs}} = -\frac{\nu^2_{obs}}{\nu_0 \tau_0} \propto \frac{1}{\tau_0}$$

We can approximate τ_0 by the minor axis of the elliptical Gaussian fit to the autocorrelation divided by the cosine of the slope angle.

That is, if the fit is as follows



then $\tau_0 \simeq \frac{b}{\cos\theta}$; the graph above can be redone with $b/\cos\theta$ for the x-axis. This would tend to move the points of lower drift values to the right, which may be beneficial.

Furthermore, if we can evaluate the centre frequency of the pulse, then we could also correct the drift for the frequency. That is, if the centre frequency is ν_{obs}, then we write

$$\text{Drift} = \frac{a}{b} \cdot \left(\frac{\bar{\nu}_{obs}}{\nu_{obs}} \right)^2 ,$$

where a & b are the major & minor axis of the ellipse, respectively, & $\bar{\nu}_{obs}$ is the mean of the centre frequency over all the bursts.

This may be difficult to do, however, & probably also be a minor correction (i.e., $\nu_{obs} \approx \bar{\nu}_{obs}$).