

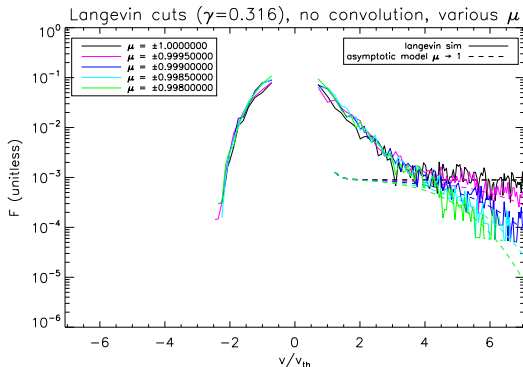
Self-Similarity of the Electron Strahl: Wind Data

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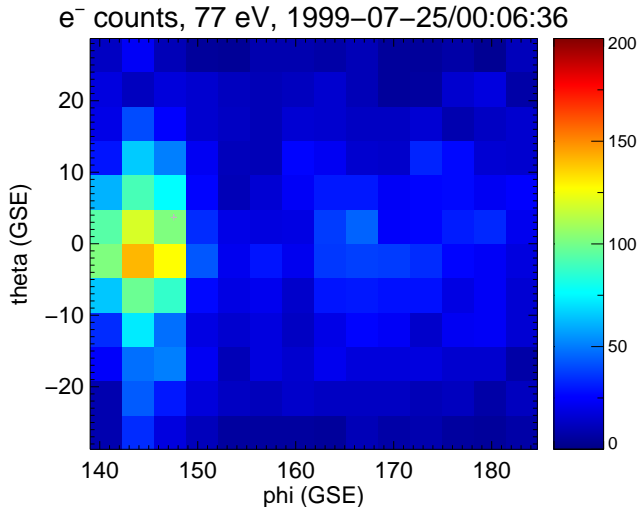
Asymptotic solution (Horaites et al., 2015)



$$F(\xi, \mu) \sim C \xi^{\alpha' - \alpha} \exp \left\{ \frac{\gamma \alpha' \xi^2 (1 - \mu)}{\beta} \right\}$$

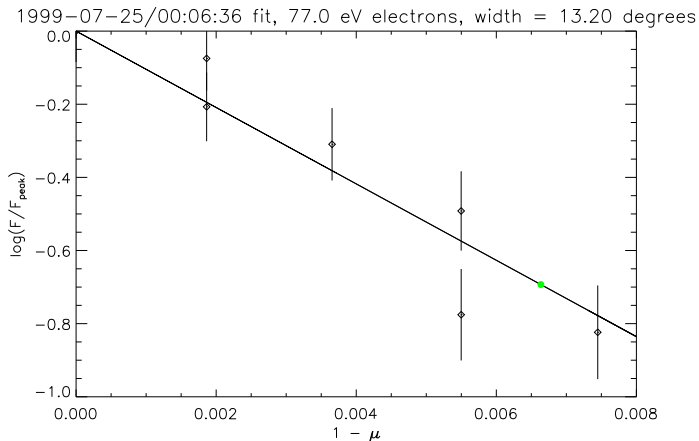
$$f(\mathbf{x}, \mathbf{V}, t) \equiv \frac{N F(\mu, \xi, t)}{T(\mathbf{x})^\alpha}, \quad \mu \equiv \mathbf{V} \cdot \hat{\mathbf{x}} / V, \quad \xi \equiv \left(\frac{V}{V_{th}} \right)^2$$

SWE Strahl Detector



Strahl electron counts measured at 3.5x4.5 degree resolution

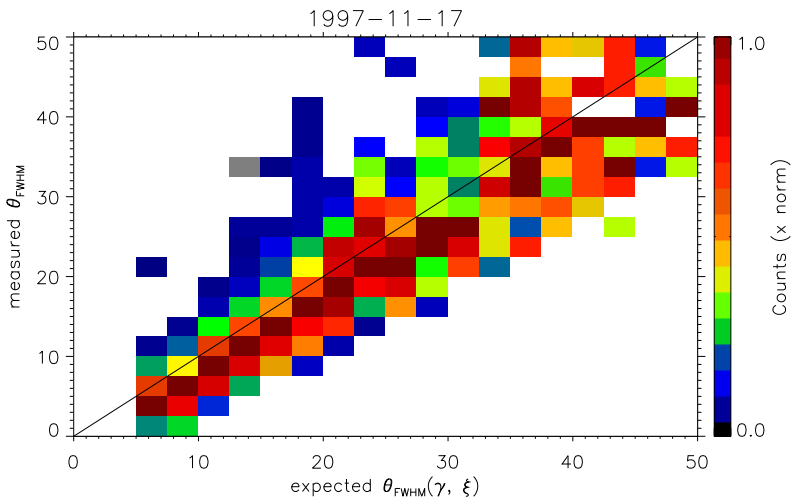
Least squares: strahl width



$$\ln F = C(1 - \mu).$$

Slope of line sets the full width at half maximum (green dot).

Model/Data Comparison



Conclusions

- ▶ Asymptotic solution to self-similar kinetic equation predicts shape of strahl distribution.
- ▶ One free parameter in model, α' , which depends on large-scale density and temperature gradients.
- ▶ More data needed to test generality of results.