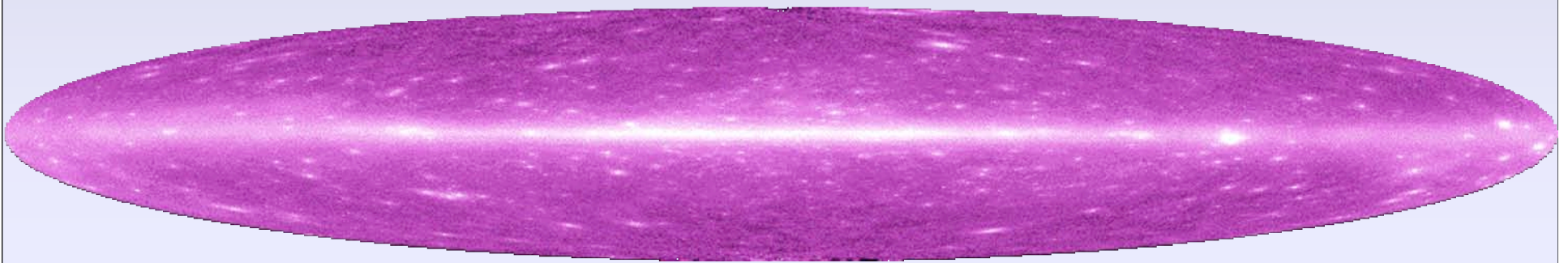
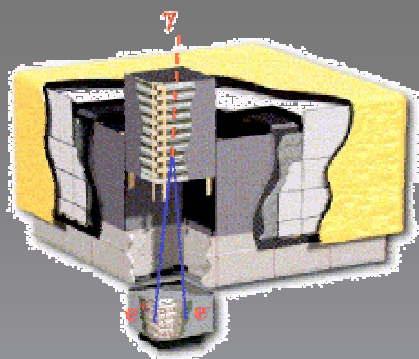


An Observational Simulator

FastSim: An Observational Simulator

- What is FastSim?
- Creating a model of GLAST
- Simulating GLAST's response to sources
- The next step

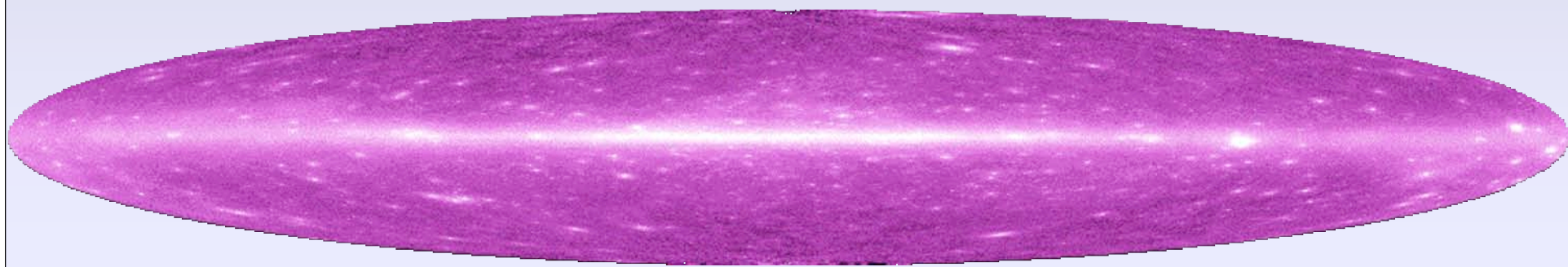


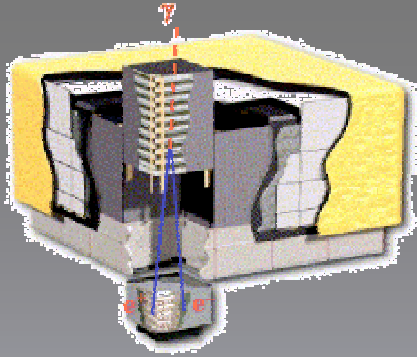


An Observational Simulator

What is FastSim?

- It provides a fast, accurate simulation of GLAST's response to sources
- FastSim is independent of large package distributions, and consists of only 47 kB of code and project files
- FastSim is still under development.

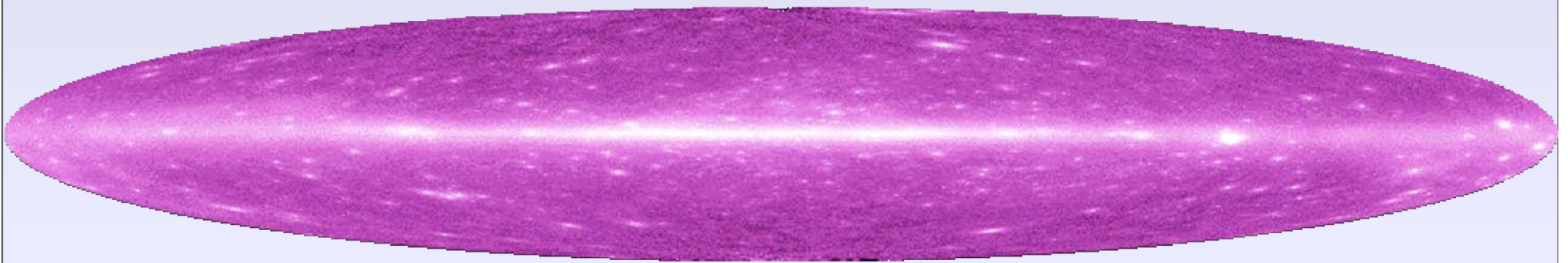


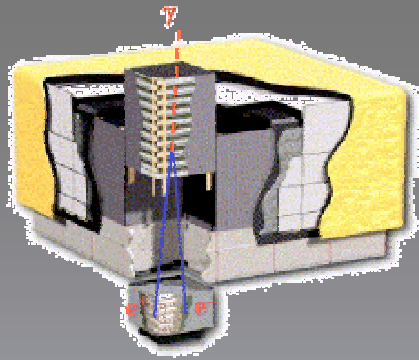


An Observational Simulator

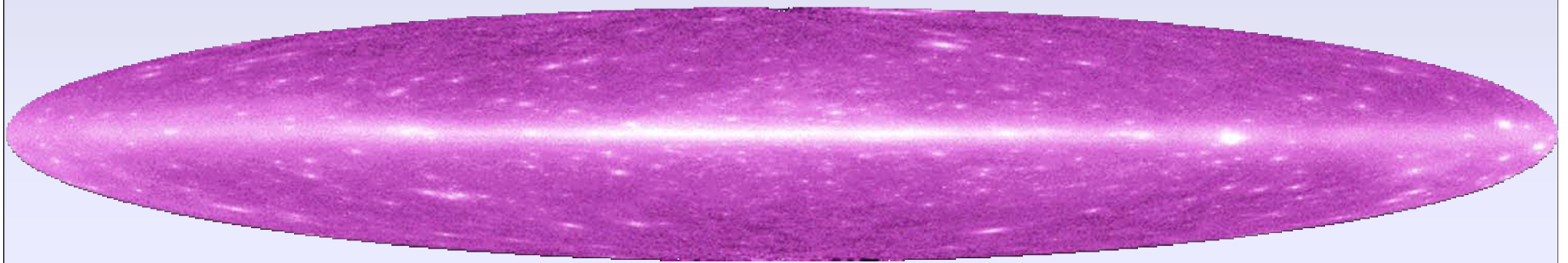
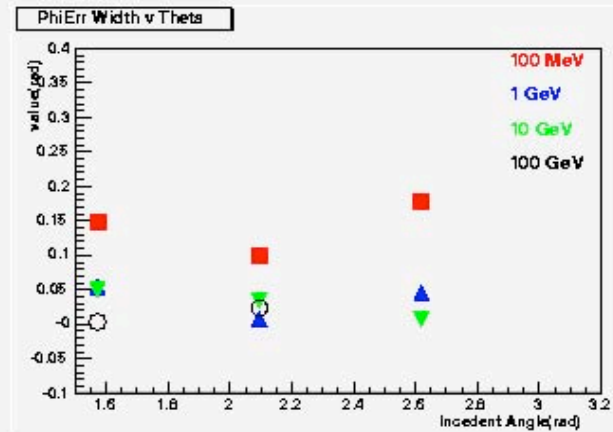
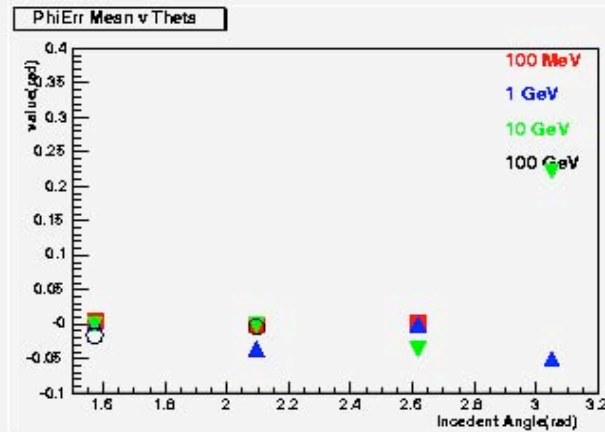
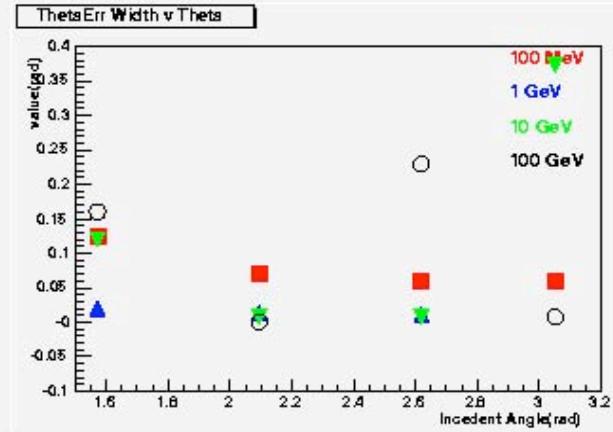
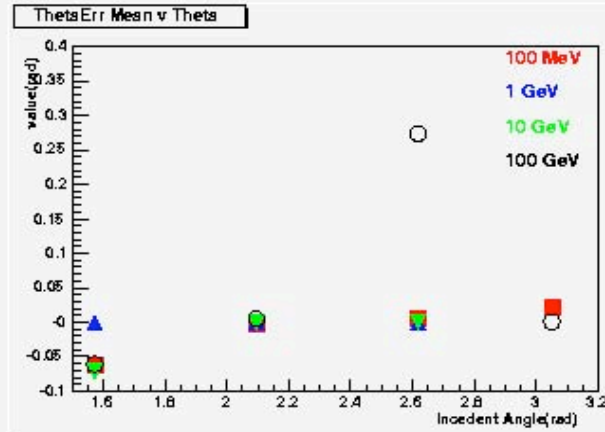
Creating a Model Of GLAST

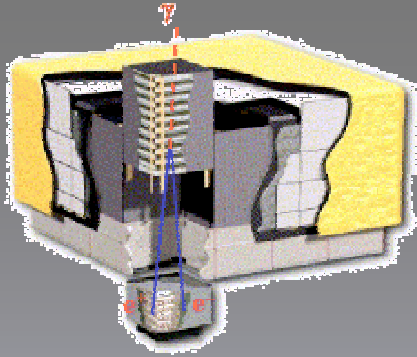
- We first simulated over 400k events using GLeam. This provided a basis for which to define our model.
- We then fit the relevant parameters over the relevant phase space; specifically we found functional forms for A_{eff} , Φ_{err} , Θ_{err} , and Energy as a functions of M_{Energy} and position relative to GLAST.
- FastSim was created using the above parameterizations.





An Observational Simulator





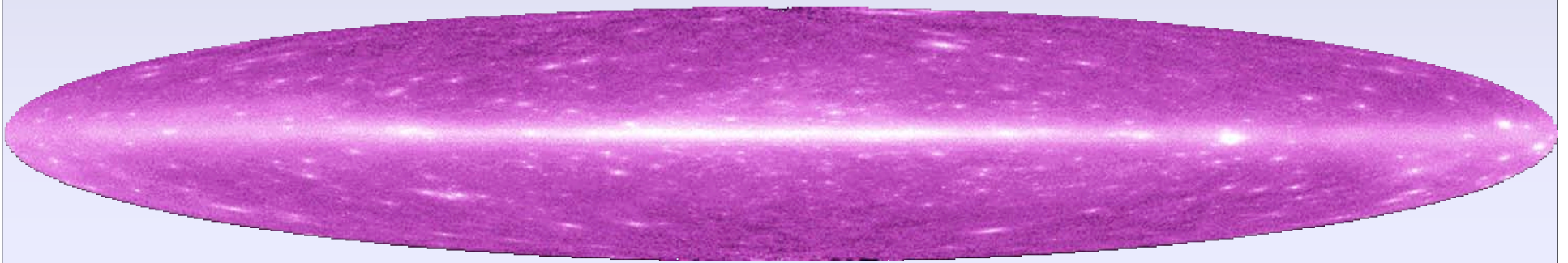
An Observational Simulator

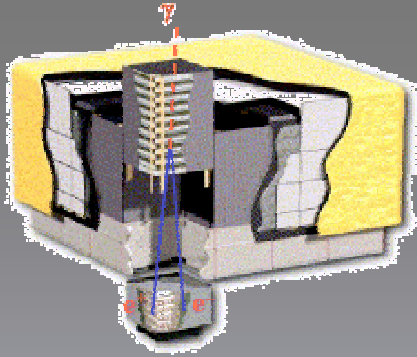
Simulating GLAST's Response

- Bill has already done the algebra in his SAS talk.
- The below equations allow us to have an accurate measure of the error ellipse of each photon on the sky.

$$\sigma_{\theta}^2 = \cos^4(\theta) \left(\cos^2(\theta) C_{xx} + 2 \sin(\theta) \cos(\theta) C_{xy} + \sin^2(\theta) C_{yy} \right)$$

$$\sigma_{\phi}^2 = \frac{1}{\tan^2(\theta)} \left(\sin^2(\theta) C_{xx} + 2 \sin(\theta) \cos(\theta) C_{xy} + \cos^2(\theta) C_{yy} \right)$$

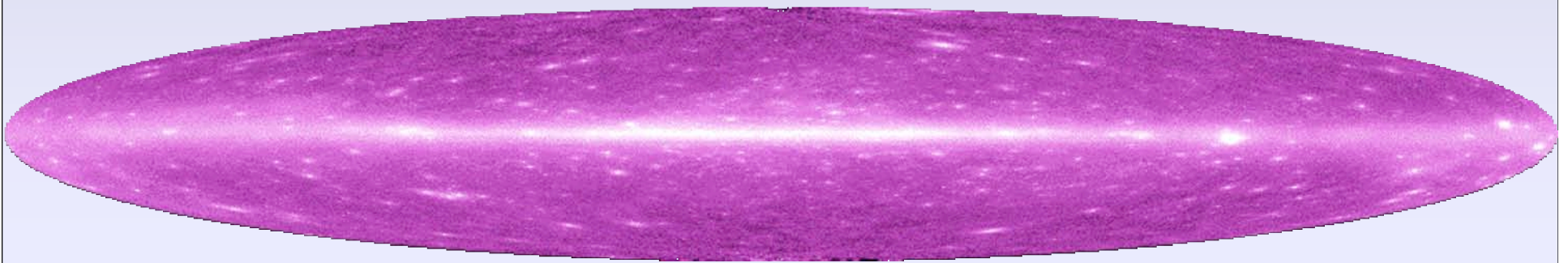




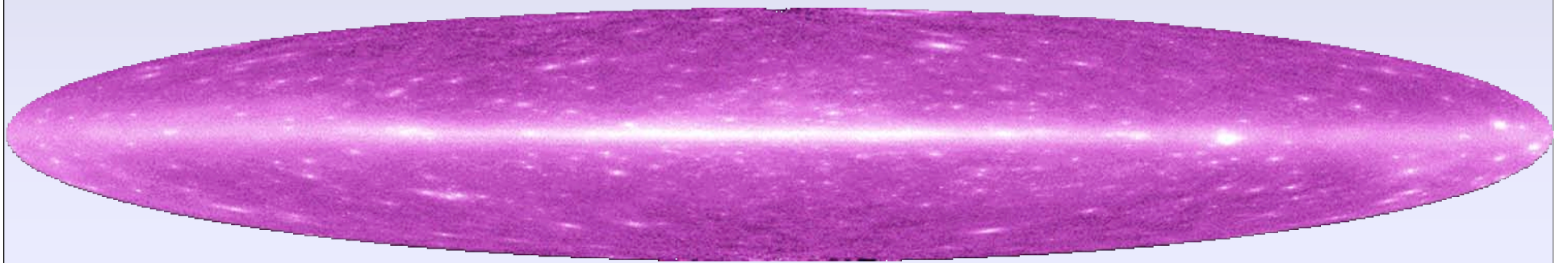
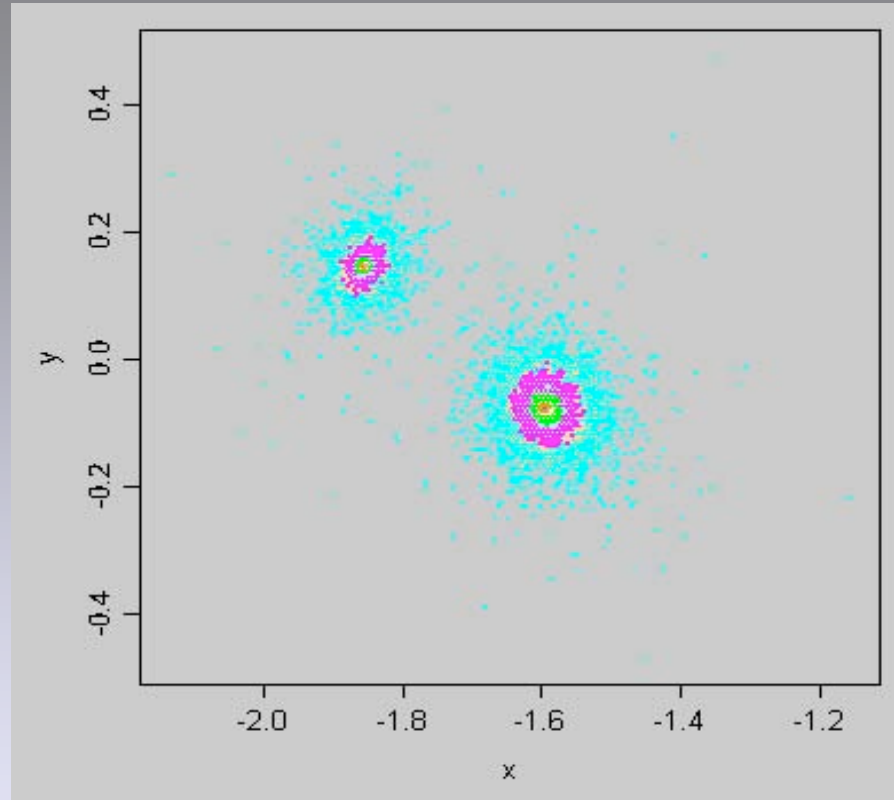
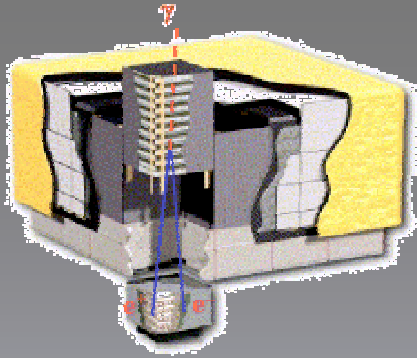
An Observational Simulator

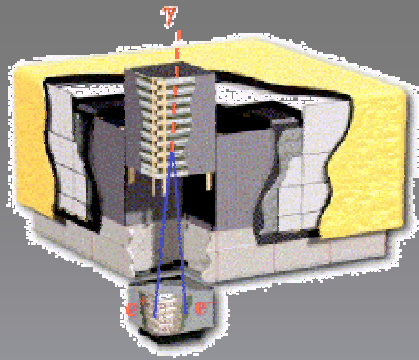
Following a Photon in FastSim

- A photon is generated using a generic algorithm and user input sources
- The photon is then allowed to scatter off IGBL
- If the photon remains it is either accepted or rejected based on GLAST's integrated A_{eff}
- Accepted photons are then “smeared” by our response functions



An Observational Simulator

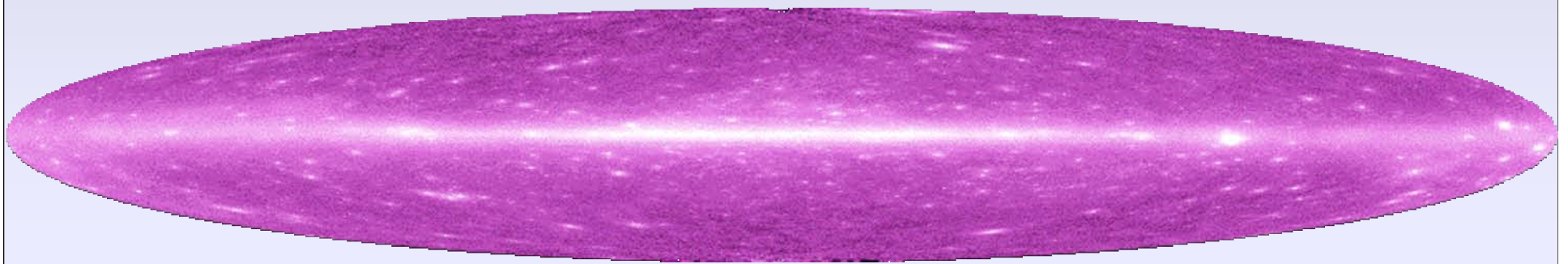


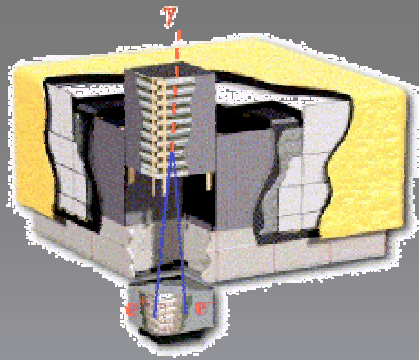


An Observational Simulator

The Next Step

- Integrate Gaudi-free flux package into FastSim to provide users with same sources as Gleam does
- Continue to improve parameterization used in FastSim
- Refine the current FastSim CMT package to be clearer and more user friendly





An Observational Simulator

Further information can be found on my website:
<http://www-glast.ucsc.edu>

