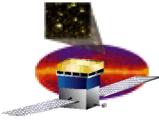


# DC1A Instrument Response Functions

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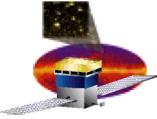
- **New set of IRFs created by Jim Chiang based on GlastRelease v4r2. These combine the smoothness of the “test” IRFs with the PSF parameterisation proposed by Toby in LATDOC AM-04355.**
- **The procedure to produce the smooth (as a function of energy and inclination) psf parameterisation is described in detail here:  
<http://www.slac.stanford.edu/~jchiang/PsfParameterization/psf.html>**



# Accessing the IRFs

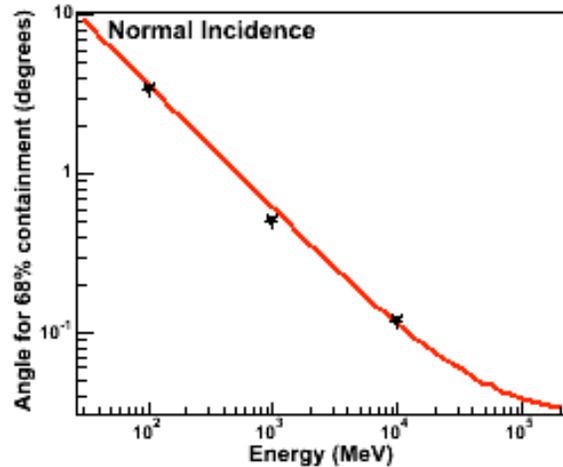
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- **IrfLoader class (written by Jim Chiang) has lots of useful methods to access the IRFs. This lives in the ScienceTools software package (there will be a tutorial tomorrow on how to install).**
- **rootIrfLoader package makes the IRFs easy to browse from within ROOT (it is in the cvs repository at [users/jchiang/rootIrfLoader](#)). Can get  $A_{eff}$  and psf for a specified energy and inclination angle. There are also methods to integrate the psf (useful for getting 68% and 95% containment radii).**
  - **This makes it easy to write a macro to recreate the 4-panel plot from any of the IRFs implemented in the science tools.**
  - **The 4-panel plot describes a small region of phase space, anyone interested should feel encouraged to use the available tools to explore the IRFs in more detail.**

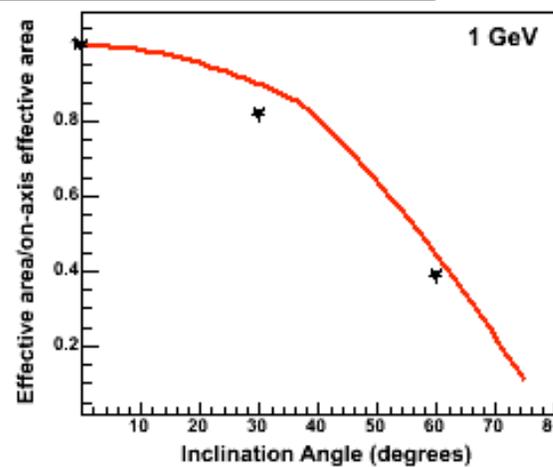


# Four Panel Plot – DC1A

Angular Resolution vs. Energy

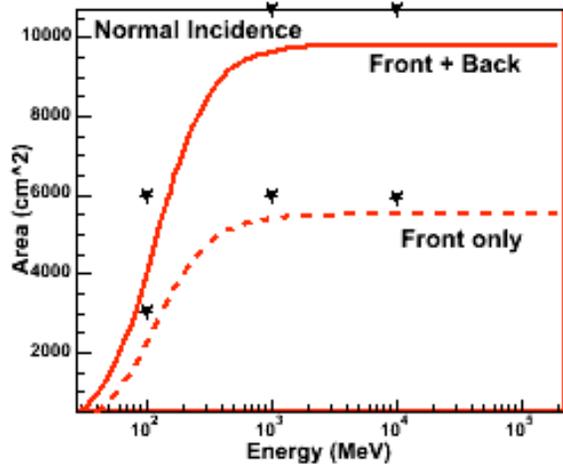


Relative Area vs. Angle of Incidence

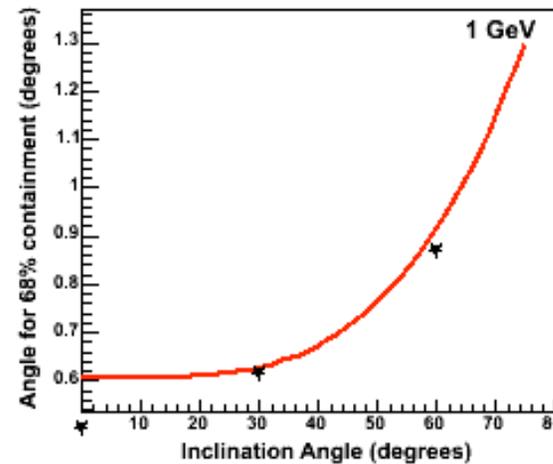


The black stars are obtained directly from simulation. The effective area is underestimated a little on axis and over estimated off axis.

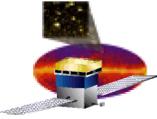
Effective Area vs. Energy



Angular Resolution vs. Angle of incidence

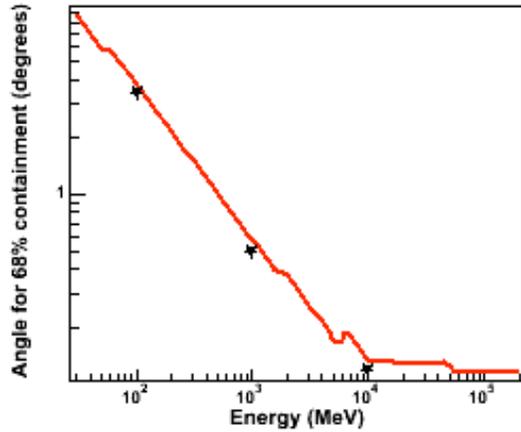


The energy resolution is 10% for all energies and inclinations.

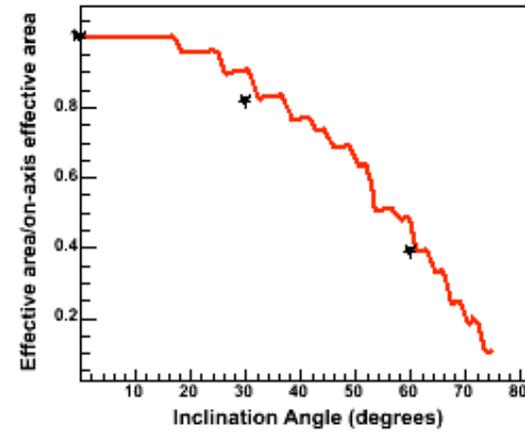


# DC1 IRFs

Angular Resolution vs. Energy

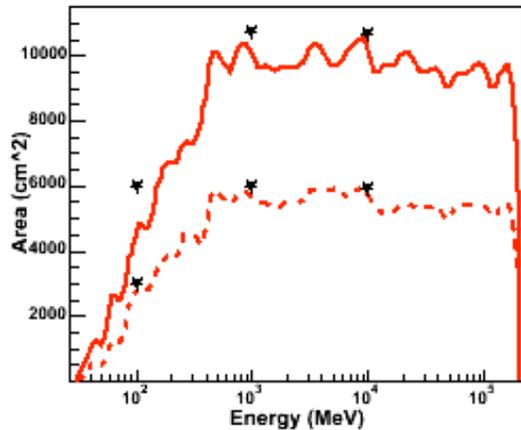


Relative Area vs. Angle of Incidence

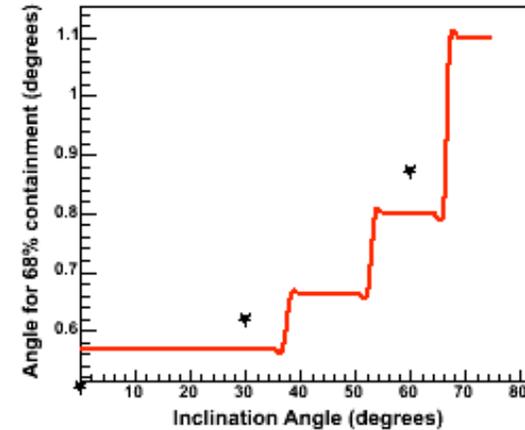


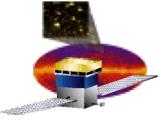
Less Smooth...

Effective Area vs. Energy



Angular Resolution vs. Angle of incidence





# Summary

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- **The four panel plots shown display a small region of the phase space, with the new interface it is now easy to change the default energies and inclinations and examine many versions of these plots.**
- **The response functions provide a reasonable description of our expected performance. It would be worthwhile to update the instrument performance page with these plots.**
- **These are also being used to generate the simulated data for the science tools checkout. Propose that they be used for observation simulation in general and for catalog analysis studies.**
- **Updated IRFs will be released in mid-Dec based on the DC2 datasets.**
- **Please note, the DC1A IRFs were generated based on a different version of the sim/recon software than was used to generate the DC1 data. These IRFs should not be used to analyse DC1 data.**