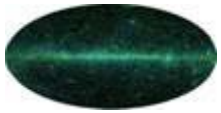
Post-DC1 Work

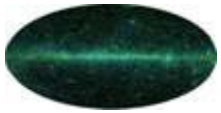
Seth Digel (HEPL/Stanford Univ.)



Outline

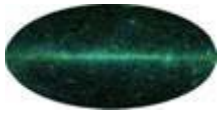
Note: *This presentation is from a science tools perspective*

- Immediate aftermath of DC1
- Friends of science tools development
  - Pipeline server, Gleam,…
- Response functions
- Likelihood characterization & optimization
- Observation simulation
- Other science tools – pulsars and GRBs
- LAT source catalog & source detection
- LAT interstellar emission model
- Data servers
- Infrastructure
  - User interface
  - Data visualization



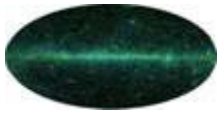
In the aftermath of DC1

- Clean up DC1 distribution and installation instructions
  - Make a final DC1 release
- Clean up documentation as necessary
- Keep data and DC1 tools and analysis results available indefinitely
- [Write a closeout report for our own reference]



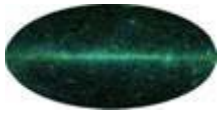
Other-than-science tools development

- Gleam
  - E.g., livetime
- Strengthening our connections with our good friends in Flight Software
  - What's in the telemetry?
  - Onboard science
- Processing pipeline
- Monitoring performance in flight
  - Calibration, alignment



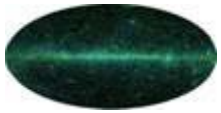
Response functions

- **Analysis group**
  - **Onboard filter, reconstruction, classification**
  - **Response functions - multiple classes, investigate & write up answers to questions like azimuthal variation of response**
- **Fix up how the classifications are specified in FT1/merit**
- **For CALDB + LATresponse, revisit the parameterizations of the response functions**



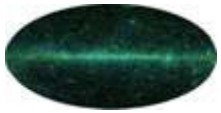
Likelihood analysis

- Performance, accuracy, statistical interpretation of results
  - Relates to observation simulation
  - Effects of finite energy resolution
  - Zenith angle cuts. Moon cuts? Sun cuts?
- Exposure map generation



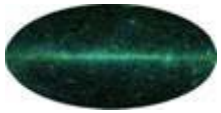
Observation simulation

- **Orbit and attitude simulation**
  - **Slewing, orientation with respect to sun**
  - **We need something that can someday provide accurate orbital positions on ~few day scale and can allow for pointed observations, slewing for autonomous observations**



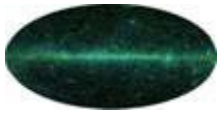
Other science tools

- **Pulsars**
  - It is time - ephemeris database, barycenter arrival time corrector, phase assignment, periodicity tests
  - With existing software, this should involve limited LAT-specific development
  - Some work is needed in the flux package, too
- **GRBs**
  - Temporal analysis, spectral-temporal physical modeling are planned
  - Work is probably needed on GRB sources for the flux package



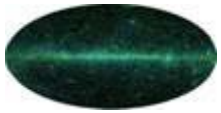
LAT source catalog

- Working group has started to meet every other week
- Source detection and definition of suitable simulated data are of immediate interest



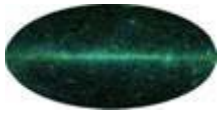
LAT interstellar emission model

- In principle we are organized as a Collaboration Science Working Team
- *Working* is not to be construed as *programming*, however
- Some important updates and improvements can be made to the EGRET team's model
  - Improved angular resolution really isn't one of them
- The model certainly will be updated after launch



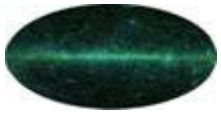
Data servers

- GSSC and SLAC servers are separate and more or less equal
- SLAC server needs clarified definition, from the perspective of high-level analysis [It will also have pre-Level 1 data]
- Any chance of convergent design?
- Processing pipeline and data catalog and how they will interface with the LAT/SLAC data server.



Infrastructure

- User interface
  - Graphics. Are we close? Do we need to reassess what we want?
  - How about in terms of a GUI?
- Contents of high-level (FT1 and FT2) inputs to science tools
- Code architecture
  - James and Toby as code architects are reorganizing design of Goodi
  - Will there be architecting beyond the infrastructure level? Should there be?



Conclusions

- There's obviously a lot to do in the immediate future and in the lead up to DC2
  - Important details, like how we can get all the work done, are not addressed here
- Data challenges, reviews, workshops, code architecting, talks like this…
  - Are all ways we are attempting to avoid discovering the right way to do things only by process of elimination
  - They are also ways we stay coordinated with each other