



# **GLAST Large Area Telescope:**

## **Dark Matter and New Physics Science Group**

**Co Conveners**

**Elliott Bloom**

**SLAC/SU**

**Aldo Morselli**

**Rome2/INFN**

**GLAST LAT WGs Conveners Meeting**

**HEPL, Stanford**

**August 27, 2005**

# Brief report

- Size of your group (39)
  - OK for now, expect more contributions after LAT is delivered to Spectrum Astro for observatory integration.
  - <http://www-glast.stanford.edu/cgi-prot/scigroup?name=darkmat>
- Any identified areas of overlap with other groups and suggestions for handling them;
  - Diffuse and catalogue,
  - GRB, unidentified sources.
  - Shared workshops,
    - Dark Matter and New Physics Workshop – July 11-13, 2005 @ SLAC
      - Mini-symposium in DM&NP workshop for Diffuse,
      - Presentation on Experimental Challenges for Lorentz Invariance by Jeff Scargle (NASA-AMES), a GRB working group member.
    - Large attendance by DM&NP people at workshop on Diffuse Emission and Source Catalogue, 052405.
    - [http://people.roma2.infn.it/~glast/DM\\_Workshop05/](http://people.roma2.infn.it/~glast/DM_Workshop05/)
- Sky model/generation plans/new tool needs (also potentially an area of overlap with other groups);
  - Halo DM sub halos,
  - DM&NP people to help with Galprop DM models.

## Brief Report (2)

- Studies/plots your group will be working on over the next year. These results should be known throughout the collaboration and they can be very useful in talks and other papers;
  - DM simulation for central galaxy
  - DM sub halo structure in the MW.
  - Source of DM in the extra galactic diffuse background.
  - Dwarf Galaxies as sources of DM signal.
- Web presence, both internal and external. How do others find out information about what is going on in the group?
  - Confluence web page
    - <http://confluence.slac.stanford.edu/display/SCIGRPS/Dark+Matter+and+Exotic+Physics>
  - Dark Matter & New Physics Web Page
  - <http://www-glast.slac.stanford.edu/ScienceWorkingGroups/DarkMatter/default.asp>

# Top Three Issues

- Name change – Dark Matter and New Physics
- Access issues (Web pages)
  - [Public Web Page](#)
  - [Collaboration only Confluence page](#)
- Coordination with other groups

# Plans for Papers

- Papers in process, papers planned for the next year, paper ideas for year 1 of operations; which are proposed to be Category 1 and which are Category 2;
  - Currently most papers planned for pre - launch, clearly not using GLAST data, will be category II (III) papers. A number have already been published.
    - Search for Supersymmetric Dark Matter with GLAST  
A.Morselli, A.Lionetto, A.Cesarini, F.Fucito, P.Ullio, Nucl. Phys. B 122B (2003) 413-416
    - The Galactic Center as a Dark Matter Gamma-Ray Source  
A.Cesarini, F.Fucito, A.Lionetto, A.Morselli, P.Ullio, Astrop. Phys. 267-285
    - Multifrequency analysis of neutralino dark matter annihilation in Coma cluster,  
S.Colafrancesco, S.Profumo, P.Ullio, Astro-ph/0507575
    - Diffuse inverse Compton and synchrotron emission from dark matter annihilations in galactic satellites. T. Baltz, L. Wai, Phys.Rev. D70 (2004) 023512
  - Repeat De Boer's paper with large group of LAT collaborators. Astro-ph/0412620 v1 23 Dec 2004, "Indirect Evidence for WIMP Annihilation from Diffuse Galactic Gamma Rays"
  - Possible category I is extensive and careful study of DM limits from all known experiments as a precursor to launch and what kind of limits GLAST can set.
  - After launch during 1<sup>st</sup> year paper on DM limits set by GLAST using pre-launch paper as a guide.