Gamma-Ray White Paper

The Future of Gamma-Ray Facilities in the MeV-EeV Range

Edited by: Kristi Engel, Carolyn Kierans, Tiffany Lewis, Michela Negro, Marcos Santander & David Williams

Presented by: Tiffany Lewis
NPP Postdoctoral Fellow
NASA Goddard Space Flight Center
tiffanylewisphd@gmail.com

Themes

- Gamma-Rays are intrinsically important to questions of fundamental physics
- Gamma-Rays are part of a complete multiwavelngth spectrum
- Gamma-Rays are part of a complete set of messengers for multimessenger science
- Gamma-Rays fit into Snowmass moreso than the Decadal because the topics they probe are more aligned with the goals of DOE and NSF-Physics than NSF-Astronomy. (NASA is more involved in the Decadal, but pays attention to both community planning processes.)
- There are some organizational and community practices emerging in gamma-ray astrophysics that might serve as a model for best practice or interconnectivity between experiments more broadly.

Priorities

- We have put fundamental physics drivers first, and asked all of the authors to keep in mind that the target agencies are DOE and NSF-Physics
- DOE supports the Cosmic Frontier and goals aligned with the study of Dark Matter, Dark Energy and Cosmology.
- NSF-Physics is heavily invested in multimessenger astrophysics as primary support for IceCube and LIGO. Neither of those facilities can do multimessenger work without gamma-ray facilities. Their stated priorities are to study dark matter, dark energy, cosmology, and particle astrophysics.
- All of the funding agencies have also requested that Snowmass point them toward ways they can collaborate and cost-share. To that end, we have a chapter on technologies (including software) which may have other applications in particle physics.

Other Points

- Document Formatting
- Authorship
- Endorsers
- Document Link: https://www.overleaf.com/read/mqnzzpfbjrgj
- Slack Channel: #wp-cf07-gamma-ray-exp

- Big Questions Colloquium series plans to cover the Cosmic Frontier in late March (stay tuned for announcements!)