PhysPAG: Gamma-rays in the coming decade

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THE ELECTROMAGNETIC SPECTRUM

Penetrates Earth Atmosphere?

Wavelength (meters)

- Radio: $10^3$
- Microwave: $10^{-2}$
- Infrared: $10^{-5}$
- Visible: $0.5 \times 10^{-6}$
- Ultraviolet: $10^{-8}$
- X-ray: $10^{-10}$
- Gamma Ray: $10^{-12}$

About the size of...

- Buildings
- Humans
- Honey Bee
- Pinpoint
- Protozoans
- Molecules
- Atoms
- Atomic Nuclei

Frequency (Hz)

- $10^4$
- $10^8$
- $10^{12}$
- $10^{15}$
- $10^{16}$
- $10^{18}$
- $10^{20}$

Temperature of bodies emitting the wavelength (K)

- 1 K
- 100 K
- 10,000 K
- 10 Million K
Beyond Fermi
Ground-based Observatories

• MAGIC/HESS/VERITAS
  – Current observatories
  – Continuing studies in the 100 GeV- >10 TeV regime
  – Exploring enhanced sensitivity <100 GeV
• HAWC
  – Under construction
  – Next generation wide-field
• CTA
  – Next generation IACT in development
MeV concepts

• Advanced Compton telescopes
• Enhanced imaging and spectroscopy capabilities
Future Directions

• Community input here!
• What are technology needs?
• Strategic readiness for gamma support of PCOS science
  – Complementarity within the planned mission ‘menu’ (particularly for multiwavelength spectral and time domain studies)
  – Taking advantage of ready/near-ready technology
  – Eye on the future
• Communicating future directions and needs