

Abstract Submitted
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Advanced Energetic Pair Telescope (AdEPT), a Medium-Energy Gamma-Ray Polarimeter STANLEY HUNTER, NASA/GSFC, ON BEHALF OF THE ADEPT COLLABORATION — Since the launch of AGILE and FERMI, the scientific progress in high-energy ($E_\gamma > 200$ MeV) gamma-ray science has been dramatic. Both of these telescopes cover a broad energy range from about ~ 20 MeV to > 10 GeV. However, a significant sensitivity gap remains in the medium-energy regime (0.75 – 200 MeV) that has been explored only by COMPTEL and EGRET on CGRO. Exploring this regime with angular resolution near the kinematic limit and high polarization sensitivity requires a telescope design with a low density electron track imaging detector. The medium-energy (~ 5 to 200 MeV) Advanced Energetic Pair Telescope (AdEPT), will achieve angular resolution of ~ 0.6 deg at 70 MeV, similar to the angular resolution of Fermi/LAT at ~ 1 GeV. AdEPT will also provide unprecedented polarization sensitivity of $\sim 1\%$ for a 1 Crab source. The enabling technology for AdEPT is the Three-Dimensional Track Imager (3-DTI) a low-density, large volume, gas time-projection chamber with a 2-dimensional readout. We describe our ROSES/APRA funded program to build a 50x50x100 cm³ AdEPT prototype, measure the angular resolution and polarization sensitivity of this prototype at an accelerator.

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