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The GRAMS (Gamma-Ray and AntiMatter Survey) Project

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GRAMS (Gamma-Ray and AntiMatter Survey) is a proposed balloon/satellite mission that will be the first to target both MeV gamma-ray observations and antimatter-based indirect dark matter searches with a LArTPC (Liquid Argon Time Projection Chamber) detector. With a cost-effective, large-scale LArTPC, GRAMS can have extensively improved sensitivities to both MeV gamma rays and antiparticles compared with previous missions. MeV gamma-ray measurements with GRAMS can explore new parameter space for annihilating dark matter and evaporating primordial black holes. GRAMS is also capable of exploring dark matter parameter space via antimatter measurements. In particular, low-energy antideuterons and antiheliums measurements can offer background-free dark matter searches. In this talk, I will give the current status of the GRAMS project and an overview of the prototype detector testing.

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