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The Gravity and Extreme Magnetism Small Explorer (GEMS)

PHILIP KAARET, University of Iowa, JEAN SWANK, KEITH JAHODA, TIM KALLMAN, NASA/GSFC, GEMS TEAM — The Gravity and Extreme Magnetism Small explorer (GEMS) was recently selected for flight in 2014 by NASA and will make the first sensitive search for X-ray polarization across a wide set of source classes including stellar black holes, Seyfert galaxies and quasars, blazars, rotation and accretion-powered pulsars, magnetars, shell supernova remnants and pulsar wind nebulae. GEMS will observe 35 targets during the 9 month prime mission. A possible science enhancement option would extend the mission with a 15 month guest observer phase. GEMS is implemented using time projection chamber (TPC) polarimeters with high efficiency in the 2-10 keV band behind thin foil mirrors. It also allows a small Bragg reflection soft X-ray experiment to be included that can extend the sensitivity to 0.5 keV. The entire spacecraft, less the solar panels, is rotated to enable measurement and correction of systematic errors. We will discuss the design of GEMS and the planned science program.

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