Extra-Solar Astrophysics with the High Energy Solar Spectroscopic Imager (\mathbf{HESSI})

D.M.Smith, R.P.Lin, J.McTiernan, A.S. Slassi-Sennou, K.Hurley (UCB)

In the summer of the year 2000, a NASA Small Explorer satellite, the High Energy Solar Spectroscopic Imager (HESSI), will be launched. It will consist of nine large, coaxial germanium detectors viewing the Sun through a set of Rotation Modulation Collimators and will accomplish high-resolution imaging and spectroscopy of solar flares in the x-ray and gamma-ray bands. This large, unshielded volume of germanium will also produce a number of important extra-solar astrophysical measurements (or upper limits), including the line shape of the Galactic 1809 keV emission from ²⁶Al, prompt positron annihilation radiation from novae, high-resolution spectra of gamma-ray bursts, pulse-phased spectra of accreting and spin-powered pulsars, etc. We will discuss a number of these topics and give the estimated sensitivities for HESSI.