A KEPLER GALAXY SURVEY: ESTABLISHING THE TEMPORAL BASELINE FOR EXTRAGALACTIC SYSTEMS

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We propose to continue monitoring ~200 of the brightest galaxies located within the Kepler field of view - the Kepler Galaxy Survey. The proposed survey will be sensitive to both continuous variability, especially low-level variations from embedded active nuclei, and random episodic events, such as supernovae. Our primary objectives are (a) to explore the photometric stability of galactic systems with Kepler's unique blend of high precision and continuous monitoring, (b) quantify the existence and amplitude of AGN signals in galaxy cores, (c) provide a direct measure of supernovae rates across galaxy types, and (d) quantify the early brightening of supernova as the explosion rises to peak luminosity. Defined by a J-band magnitude limit, these 200 galaxies encompass a range of morphologies and are located across the field-of-view. Given the Survey's source luminosities spatial distribution these data will form a fundamental temporal baseline for extragalactic investigations with Kepler.