

MILLIMAGNITUDE VARIABILITY OF GALAXIES IN THE KEPLER FIELD: GOING FOR THE BREAK

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We propose to continue to monitor about 400 galaxies in the Kepler field for light variations at the millimagnitude (mmag) level to detect previously unknown active galactic nuclei (AGN). Kepler's ability to make measurements at unprecedentedly low amplitudes of variability allows us to study with extraordinary precision, for a large sample, the correlations with time an hour (long-cadence mode) to about a year. Current results for bright AGNs indicate that the break in the optical power spectrum lies beyond the time scales sampled by a single year of Kepler data (Mushotzky, 2012, private communications). We request a second year of data to be able to pinpoint the break in power law of AGN with low level of variability. The AGN discovered will be followed up with imaging and spectroscopy with UMD guaranteed time on the 4.3 m Discovery Telescope and provide better relationships between black-hole and accretion disk characteristics and variability.