

# Detection of solar-like oscillations from Kepler photometry of the open cluster NGC 6819

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Asteroseismology of stars in clusters has been a long-sought goal because the assumption of a common age, distance and initial chemical composition allows strong tests of the theory of stellar evolution. We report results from the first 34 days of science data from the Kepler Mission for the open cluster NGC 6819 -- one of four clusters in the field of view. We obtain the first clear detections of solar-like oscillations in the cluster red giants and are able to measure the large frequency separation and the frequency of maximum oscillation power. We find that the asteroseismic parameters allow us to test cluster-membership of the stars, and even with the limited seismic data in hand, we can already identify four possible non-members despite their having a better than 80% membership probability from radial velocity measurements. We are also able to determine the oscillation amplitudes for stars that span about two orders of magnitude in luminosity and find good agreement with the prediction that oscillation amplitudes scale as the luminosity to the power of 0.7. These early results demonstrate the unique potential of asteroseismology of the stellar clusters observed by Kepler.

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