An asteroseismic membership study of the red giants in three open clusters observed by Kepler: NGC6791, NGC6819, and NGC6811

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(Submitted on 6 Jul 2011)

Studying star clusters offers significant advances in stellar astrophysics due to the combined power of having many stars with essentially the same distance, age, and initial composition. This makes clusters excellent test benches for verification of stellar evolution theory. To fully exploit this potential, it is vital that the star sample is uncontaminated by stars that are not members of the cluster. Techniques for determining cluster membership therefore play a key role in the investigation of clusters. We present results on three clusters in the Kepler field of view based on a newly established technique that uses asteroseismology to identify fore- or background stars in the field, which demonstrates advantages over classical methods such as kinematic and photometry measurements. Four previously identified seismic non-members in NGC6819 are confirmed in this study, and three additional non-members are found -- two in NGC6819 and one in NGC6791. We further highlight which stars are, or might be, affected by blending, which needs to be taken into account when analysing these Kepler data.

Comments:	12 pages, 9 figures, 5 tables, accepted by ApJ
Subjects:	**Solar and Stellar Astrophysics (astro-ph.SR)**
Cite as:	**arXiv:1107.1234 [astro-ph.SR]**
	(or **arXiv:1107.1234v1 [astro-ph.SR]** for this version)

Submission history

From: Dennis Stello [view email]
[v1] Wed, 6 Jul 2011 20:00:02 GMT (1021kb)

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