Bright Variability Study Near NGC 6811

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Preliminary results of a BVRclc stellar variability study conducted by the AAVSO in coordination with the BOKS program are given. Stars in a 1.5x0.75degree field brighter than V=15 were monitored over several months to extend the BOKS survey to brighter limits.

Kepler
NASA Discovery Mission; see http://kepler.nasa.gov
0.95m telescope, 105square degree FOV
4-6yr mission duration, with continuous observations of 100,000 A-K main sequence stars, V=9-15. Temporal resolution 15mins
one spectral band (400-850mm)
6.5m integration gives 20mp for 12thmag star, capable of detecting earth-sized planets.

Field centered in Cygnus at 19:22:40, +44:30 (i=76.5, b+13.3)
launch October 2008

NGC 6811
Center: 19:37:17 +46:23:18 (i=78.2, b=+12.0)
Young open cluster in Cygnus, in Kepler field
Roughly 100 members; mean distance: 1040pc; age: 0.7Gyr
Primary early studies were Sanders (1971) and Lindoff (1972), identifying 377 stars in region. (Glushkova (1999) performed a radial velocity study. Franqsen & Arentoft (1998) added NGC6811 to STACC (Small Telescope Array with CCD Cameras) list.
Mills et al., (2004) studied NGC6811 as part of the WIYN UBVRI open cluster study with the KPNO 0.9m; see http://www.astro.ufl.edu/~ata/wocs/index.html

The Campaign
This is a collaboration with the Howell, et al. Burrell-Optical-Kepler Survey (BOKS; see papers 162.15 and 162.16).

BOKS saturates around V=14, so the American Association of Variable Star Observers (AAVSO) initiated a worldwide campaign with amateurs to cover the 0.75x1.5deg field, primarily using Cousins Rc filters. The AAVSO campaign completes the stellar census from the BOKS saturation to the brightest stars in the field. Temporal coverage was extended over several months for the long period stars and to improve the periods of short period variables. The longitudinal coverage by AAVSO observers helps to remove period aliasing in BOKS data, and the geographical spread ensures continuous coverage of stars during lost KPNO nights. The AAVSO has 1000 members in 45 countries; another 1000 observers worldwide contribute data annually. See posters 162.04 and 162.05 for more detail. The AAVSO is an ideal organization for such campaigns, providing observers and training to achieve the highest scientific quality data.

15,000 CCD images were submitted from more than a dozen observers. Another 20 observers provided an additional 15,000 data points on the known variables in the field. Further analysis is in progress.

Previous Variable-Star Studies
van Cauteren et al. (2005) monitored with BHO 0.4m telescope (20x99ppcmin FOV) with typically 200 BV frames over several months in 2003. 441 stars studied; 9 were found to be new variables (6 delta Scuti, 1 short period, 2 longer period). See figures 4 and 5 below.

No other systematic survey has been made, though the field is covered by the unfiltered ROTSE-I NSVS survey (Wozniak et al. 2004).

References
Mills, E. et al., 2004, AAS 205, 2219
Mills, E. et al., 2006, AAS 207, 7010.
Feldmeier, J. et al., 2007, BAAS 39(2)15 (this session)
Howell, S. et al., 2007, BAAS 39(2)16 (this session)
Wozniak et al., 2004, AJ 127, 2436.

Download AAVSO Data: http://www.aavso.org