

Variability among Pleiades Stars

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In this photometric search we try to find variable stars (and new eclipsing binaries) in one field among the Pleiades cluster, for that we have conducted a CCD R-band survey using our telescope in Großschwabhausen near Jena.

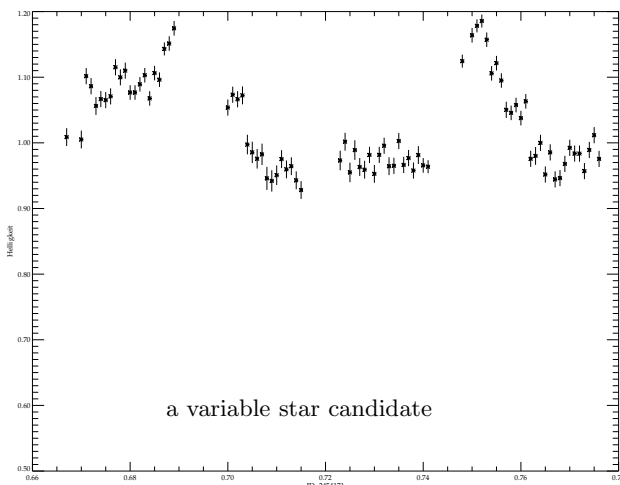
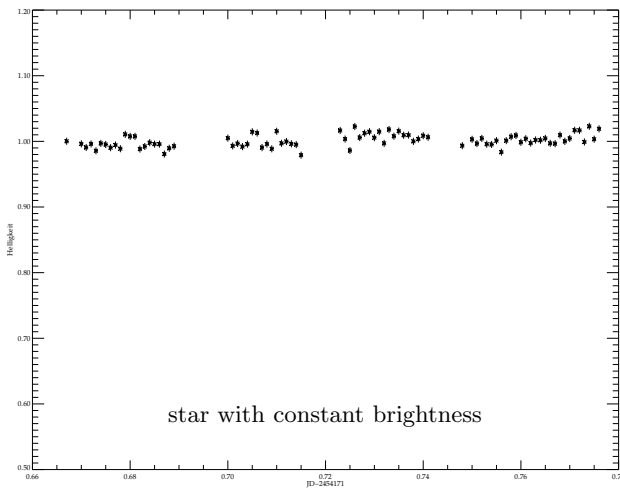
The area covered by our telescope and CCD camera has 0.6 square deg within the region of the cluster (RA: 3h 42m 20.6s, Dec: 25d 36' 45"). First observations were done in March and April 2007 and again between January and March 2008.

In order to reduce our data we first do the basic bias and flat field calibration with MIDAS and then use three programs:

- Source detection with GAIA (Global Astrometric Interferometer for the Astrophysics), usually around 600 stars in our field
- Aperture photometry for all stars in all images with MIDAS (Munich Image Data Analysis System)
- Relative photometry program (software based on ADA from Broeg et al. 2005), yielding typical precision of few milli-mag.

We first search for constant stars in the field, then create an artificial comparison star, then obtain magnitudes of all other stars relative to this comparison star. Then, we have light curves for all stars in the field, which we can plot (JD time against the brightness).

We can also add up all images taken to obtain a very deep image of his field, e.g. to search for new faint Pleiades members: The Pleiades star cluster is an ideal hunting ground for sub-stellar objects due to its richness of members, young age, proximity, and scarce interstellar absorption. An image of our field (taken with our telescope) and examples for light curves from the first night (11 March 2007) are shown below.



field coordinates:
RA 3h 42m 20.6s Dec 25d 36' 45"