N10b Detection of tiny oscillations in G type giant HD76294

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We conducted the radial velocity observation of G type giant HD76294 on 19-27th of January, 2006 with HIDES (+I2 filter) at Okayama Astrophysical Observatory. The result showed the radial velocity variations with the time scale of 8-10 hours and p-v of 15m/s. Here we report this result.

The solar 5 minute oscillations(p-mode) are known to be distributed in an equally spaced manner in its power spectrum and also the envelope of the peaks to have a gaussian shape. Accordingly it is generally expected that there might be a similar spectral structure to the Sun in the power spectra of giants and subgiants. Using the power spectra, we can get the characteristics of the internal structure of giants.

We checked our reduction software by confirming the constancy of Tau Cet (standard star) within 1.6m/s (rms). So the radial velocity variations in HD76294 is considered to be real. We summarize the characteristic behaviors as follows, 1) periodic variations with time scale of 8-10 hrs are seen, 2) beating phenomenon is also clear and multiple periods are expected.

To minimize the alias effect due to one day gap in observation, we performed Fourier analysis and clean procedure for the time series. The obtained data showed several significant peaks nearly equally spaced, whose distance corresponds to the value predicted by the theory. We have a plan to compare it with theoretical models and to take a knowledge about the internal structure of the giant HD76294.