REM observations of the Herbig Ae stars V346 Ori and PDS2

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Abstract

We present preliminary results of a photometric study devoted to the two Herbig Ae stars V346 Ori and PDS 2, based on data from the R.E.M. telescope. As a result, 1) we confirm the multiperiodicity of V346 Ori; 2) we discover δ Scuti-like pulsation in PDS 2.

Introduction

V346 Ori and PDS 2 are interesting objects: V346 Ori was already suspected to be a multiperiodic PMS δ Scuti star (Pinheiro et al. 2003), whereas PDS 2 was investigated because its spectral type F3V makes it a very good object to constrain the poorly sampled red edge of the PMS δ Scuti instability strip. We studied these two objects by using the 0.6 m R.E.M. telescope (La Silla, Chile, www.rem.inaf.it). Note that present R.E.M. observations for V346 Ori are part of a multisite campaign for which data analysis is ongoing.

Results

Due to the lack of space, here we only present the periodogram obtained for V346 Ori (see Fig. 1) based on about 94 h of R.E.M. observations. These data allowed us to identify at least 9 significant frequencies (see figure). A similar analysis for PDS 2, (22 h of R.E.M. observations during 7 nights), allowed us to establish that PDS 2 is a multiperiodic pulsating star with at least three significant oscillation frequencies at f1=17.05 c/d, f2=13.77 c/d, f3=24.24 c/d. Thus, PDS 2 is a new member of the PMS δ Scuti class. In the future we will: 1) finalize the analysis for V346 Ori (taking advantage of the photometry from other sites) and for PDS 2; 2) interpret the periodicities found for the two stars in the light of both radial and non-radial pulsation models.

References

Figure 1: Periodogram for V346 Ori R.E.M. data. All significant frequencies are indicated and labelled.