

## REM observations of the Herbig Ae stars V346 Ori and PDS2

S. Bernabei,<sup>1,2</sup> M. Marconi,<sup>3</sup> V. Ripepi,<sup>3</sup> S. Leccia,<sup>3</sup> E. Rodríguez,<sup>4</sup> T. D. Oswalt,<sup>5</sup>  
M. J. López-González,<sup>4</sup> F. J. Aceituno,<sup>4</sup> A. Ruoppo,<sup>3,6</sup> F. Palla,<sup>7</sup> M. J. P. F. G. Monteiro,<sup>8</sup>  
E. Molinari,<sup>9</sup> G. Chincarini,<sup>9</sup> F. M. Zerbi,<sup>9</sup> S. Covino,<sup>9</sup> V. Testa,<sup>10</sup> G. Tosti,<sup>11</sup> F. Vitali,<sup>10</sup>  
L. A. Antonelli,<sup>10</sup> P. Conconi,<sup>9</sup> G. Malaspina,<sup>9</sup> L. Nicastro,<sup>12</sup> E. Palazzi<sup>12</sup>

<sup>1</sup> INAF-OABologna, Via Ranzani 1,40127 Bologna, Italy

<sup>2</sup> Univ. de La Laguna, Avda. Astrofísico F. Sánchez sn, 30071 La Laguna, Spain

<sup>3</sup> INAF-OACapodimonte, Via Moiarriello 16, 80131, Napoli, Italy

<sup>4</sup> IAA, CSIC, Apdo. 3004, 18080 Granada, Spain

<sup>5</sup> Florida Institute of Technology, 150 W Univ. Blvd., Melbourne, FL 32901-6988, USA

<sup>6</sup> Università Federico II, Complesso Monte S. Angelo, 80126, Napoli, Italy

<sup>7</sup> INAF-OAArcetri, Largo E. Fermi, 5, I-50125, Firenze, Italy

<sup>8</sup> DMA-Fac. de Ciências and CAUP, Rua das Estrelas, 4150-762 Porto, Portugal

<sup>9</sup> INAF-OABrera, Via E. Bianchi 46, 23807, Merate (LC), Italy

<sup>10</sup> INAF-OARoma, Via di Frascati, 33, 00040 Monte Porzio Catone (ROMA) Italy

<sup>11</sup> Perugia University- Piazza Università, 1, 06100 Perugia, Italy

<sup>12</sup> INAF-IASF, Bologna, Via P. Gobetti 101, I-40129 Bologna, Italy

### 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  $\delta$  Scuti-like pulsation in PDS 2.

### Introduction

V346 Ori and PDS 2 are interesting objects: V346 Ori was already suspected to be a multi-periodic PMS  $\delta$  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  $\delta$  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](http://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  $f_1=17.05$  c/d,  $f_2=13.77$  c/d,  $f_3=24.24$  c/d. Thus, PDS 2 is a new member of the PMS  $\delta$  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

Pinheiro F. J. G., Folha D. F. M., Marconi M., et al., 2003, A&A, 399, 271

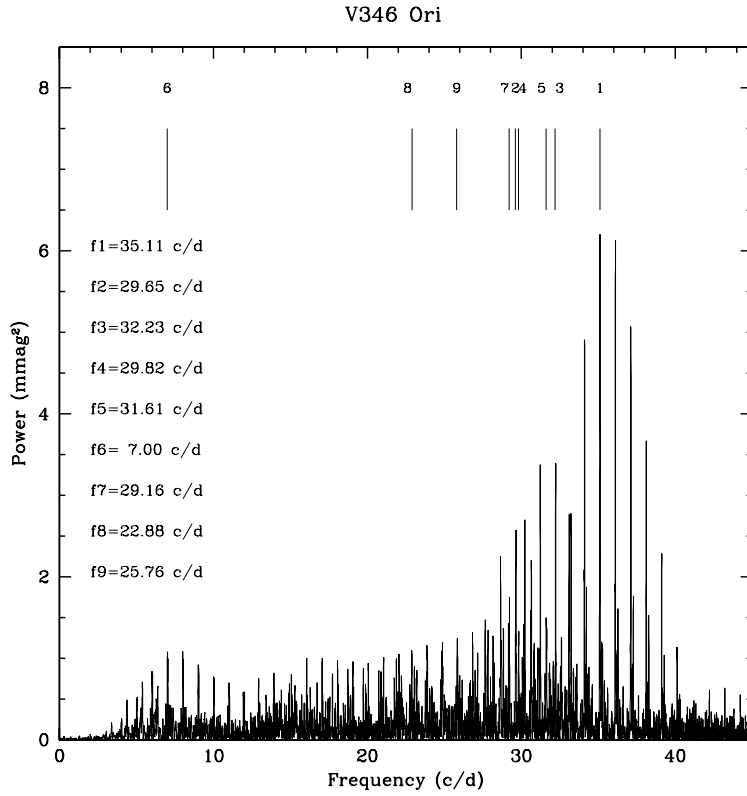


Figure 1: Periodogram for V346 Ori R.E.M. data. All significant frequencies are indicated and labelled.