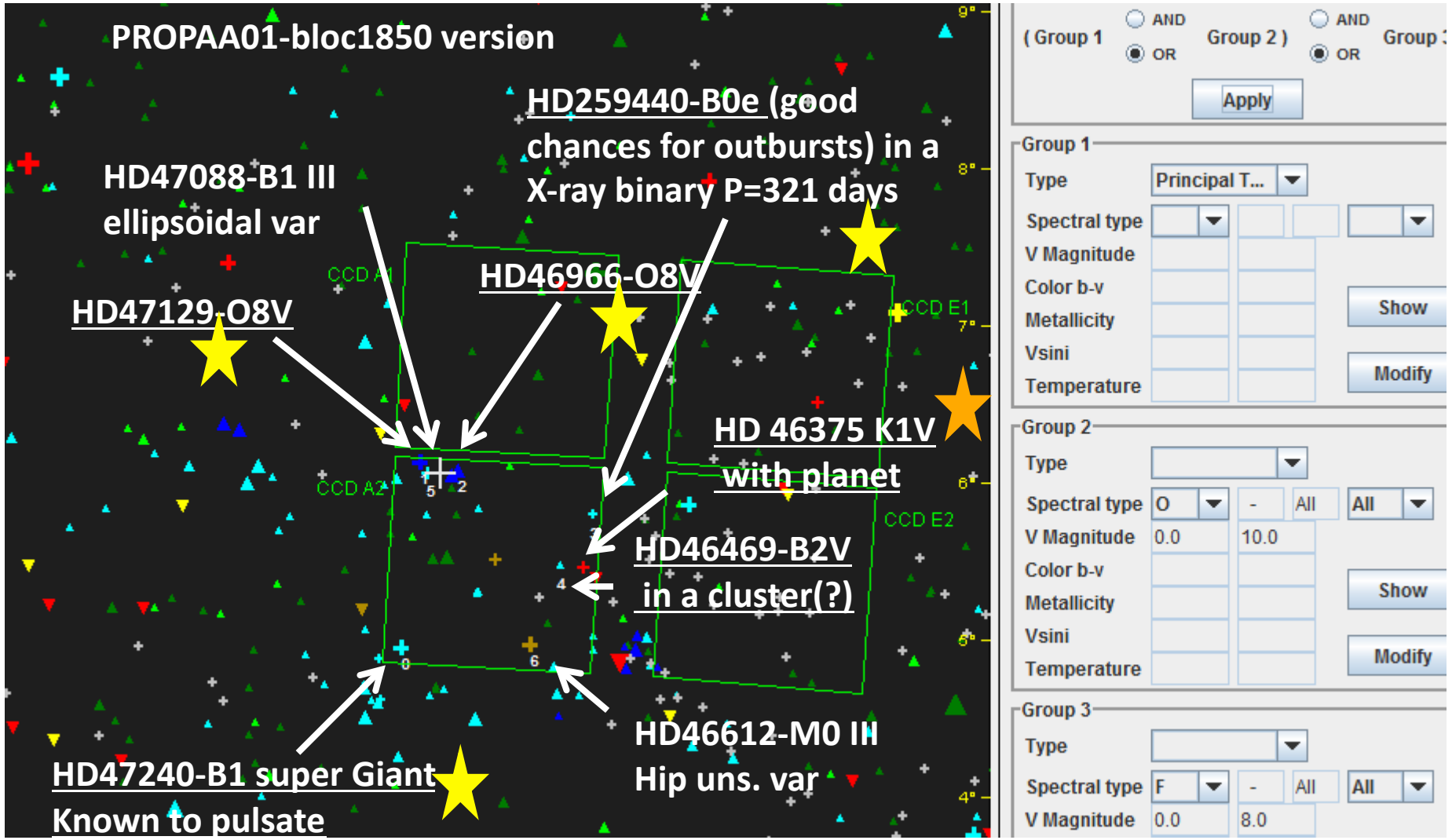
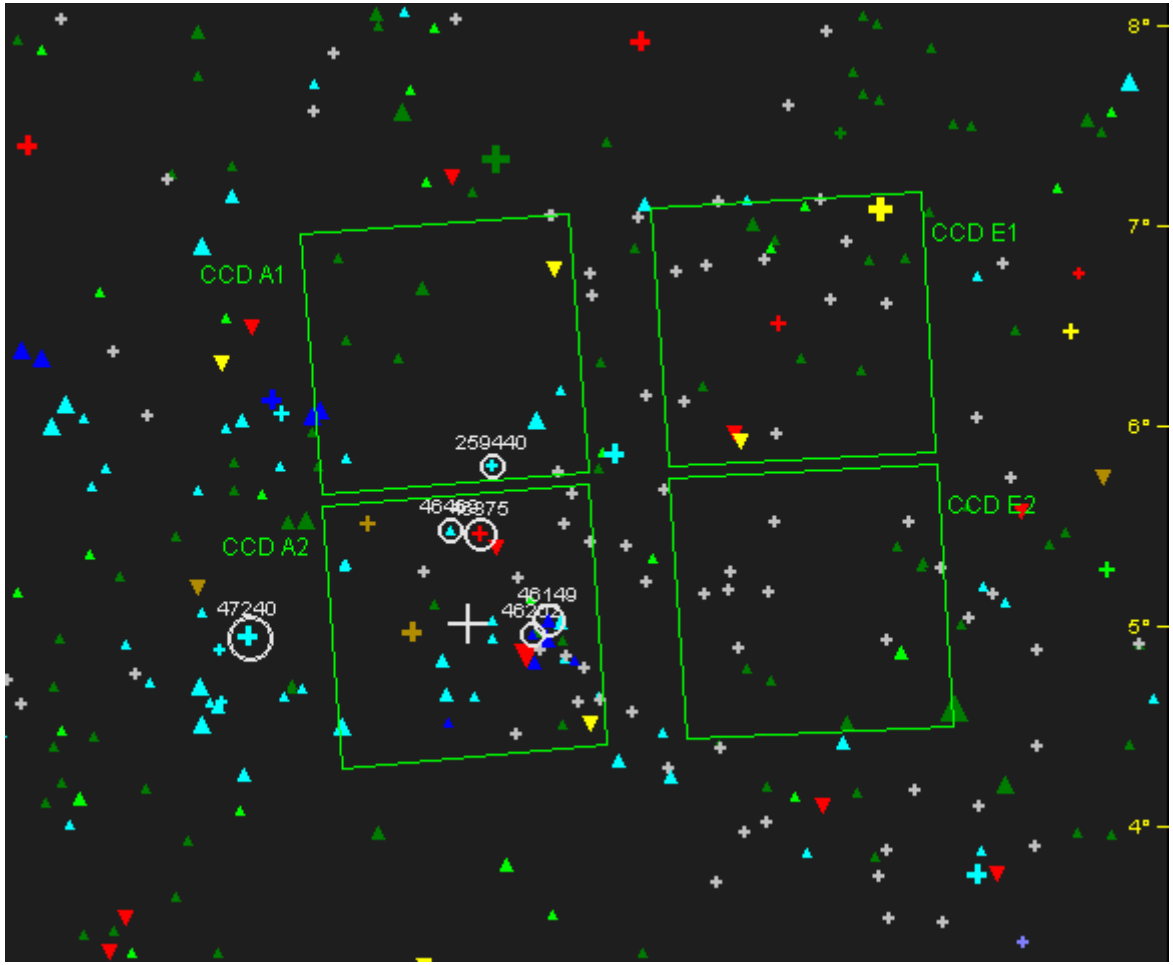
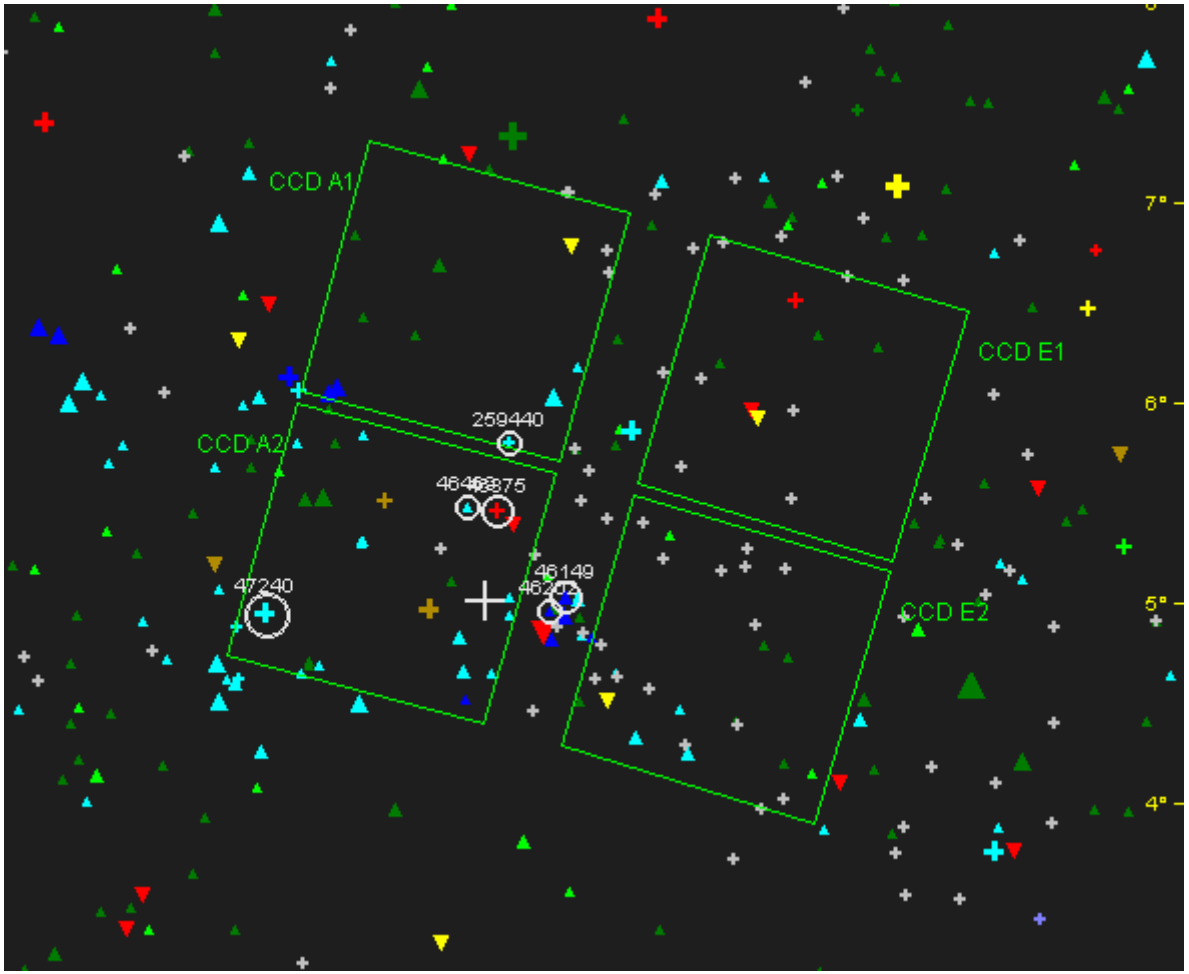

PROPAA01-bloc1850 version
HD259440-B0e (good chances for outbursts) in a X-ray binary P=321 days
HD47088-B1 III ellipsoidal var
HD46966-O8V
HD47129-O8V
HD 46375 K1V with planet
HD46469-B2V in a cluster(?)
HD46612-M0 III Hip uns. var
HD47240-B1 super Giant Known to pulsate
CCD A1
CCD A2
CCD E1
CCD E2
(Group 1
AND
OR
Group 2)
AND
OR
Apply
Group 1
Type
Principal T...
Spectral type
V Magnitude
Color b-v
Metallicity
Vsini
Temperature
Show
Modify
Group 2
Type
Spectral type
O
-
All
All
V Magnitude
0.0
10.0
Color b-v
Metallicity
Vsini
Temperature
Show
Modify
Group 3
Type
Spectral type
F
-
All
All
V Magnitude
0.0
8.0


CCD A1
CCD E1
CCD A2
CCD E2
259440
47240
46149
8°
7°
6°
5°
4°


CCD A1
CCD A2
CCD E1
CCD E2
259440
47240
46149
7°
6°
5°
4°

O-type stars observed by CoRoT during run SRa02

star	spectral type	binary period
HD 46202	O9 V	
HD 46149	O8.5 V + OB-type	$P \approx 2.27$ yr
HD 46966	O8 V	
HD 47129	O7.5 I + O6 I	$P = 14.39625$ d
HD 46150	O5.5 V ((f))	
HD 46223	O4 V ((f$^+$))	

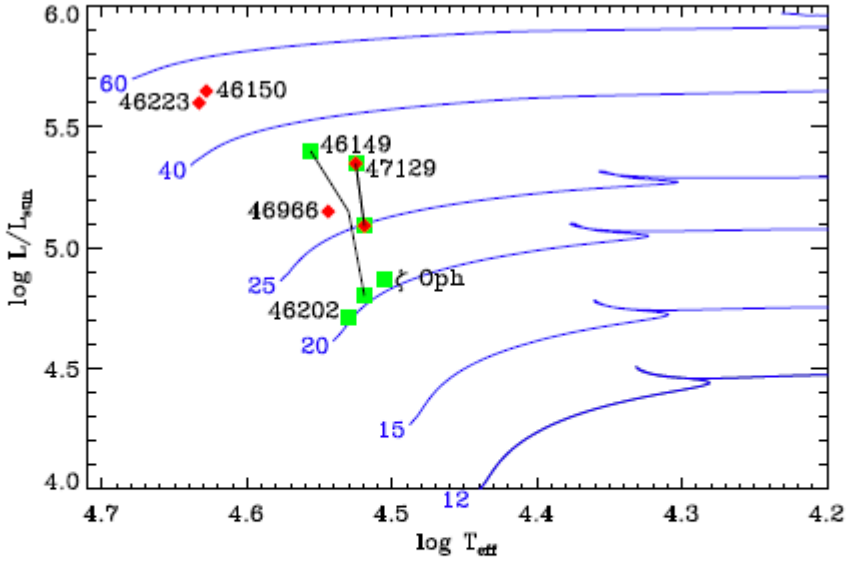


Figure 3. HR diagram indicating the position of the stars discussed here, as well as ζ Oph. $T_{\rm eff}$ and log L are from the papers cited in the text. Green squares indicate pulsations, red diamonds indicate the presence of red noise. Solid lines connect the binary components for HD 46149 and HD 47129. The stellar tracks are from Brott et al. (2011), with a Zero-Age Main Sequence rotational velocity of 220 km s^{-1}.

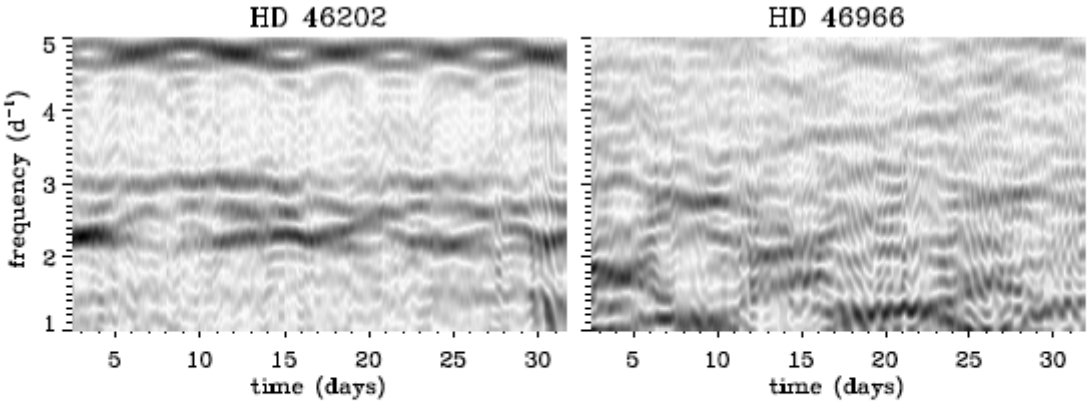


Figure 1. Time-frequency diagram of HD 46202 (left) and HD 46966 (right). The grey scale is proportional to the semi-amplitude, which was calculated from a Lomb-Scargle analysis on a sliding 5-day window of the observations (centred on the time given on the x-axis). The time is relative to the start of the observations.

2.1. HD 46202 (O9 V)

This star was studied by Briquet et al. (2011). In the periodogram they found a number of β-Cep like pulsation frequencies. The time-frequency diagram (see Fig. 1, left) shows that these frequencies are stable, at least during our campaign, confirming that they are indeed caused by pulsations driven by the opacity mechanism.

Asteroseismic modelling of HD 46202 was done using the Code Liégeois d'Évolution Stellaire (CLÉS, Scuflaire et al. 2008). The best agreement with the observed frequencies was found for models in the 23.3 – 24.9 $M_{\odot}$ range, with a core overshooting of 0.05 – 0.15 times the pressure scale height. The modelling showed that the observed modes are not excited in these models, thereby presenting a considerable challenge to the theoretical interpretation of the observations.

2.2. HD 46149 (O8.5 V + OB-type)

Degroote et al. (2010) found a rotation period of about 11.8 days in the light curve of HD 46149, which they attribute to the primary. They also found a number of frequencies with a constant spacing of 0.48 ± 0.02 d^{-1}. This is similar to stochastically excited p-modes. The time-frequency diagram indicates that these frequencies are not present during the whole duration of the observing run. A more detailed analysis shows that they have a lifetime of 3-4 days.

here is what we know of the star HD 47240:

1. dominant period of 1.73 d, ampl of 29 +/- 4 mmag, additional variability in Hipparcos but too few data to determine periods
2. vsini=94 +/- 9 km/s
3. Teff = 19000K
4. log g=2.48
5. log(L/Lsun)=4.93
6. R=27Rsun
7. mass loss rate=17.10^(-8) solar masses per year (i.e. mild)
8. terminal wind speed=1000 km/s (also mild)
9. n(He)/n(H)=0.15, i.e. evolved past the main sequence

All these numbers come from Lefever et al., 2007, A&A, 463, 1093

CoRoT so far did a B8I (short run) and B6I (long run) supergiant, but their periods were too long compared to the CoRoT time series to make detailed modelling. Here, we expect to do much better for HD47240 given it has shorter periods, lower mass loss rate and is less evolved.