GROUND-BASED OBSERVATIONS OF COROT SEISMO TARGETS IN DECEMBER 2011-JANUARY 2012

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Two runs performed in the framework of the ESO LP 185.D-0056

December 16-26, 2011 10 nights, obs. Thierry Morel (Liege University)

January 4-9 , 2012 5 nights , obs. Monica Rainer & Francesco Borsa (INAF-OABrera)

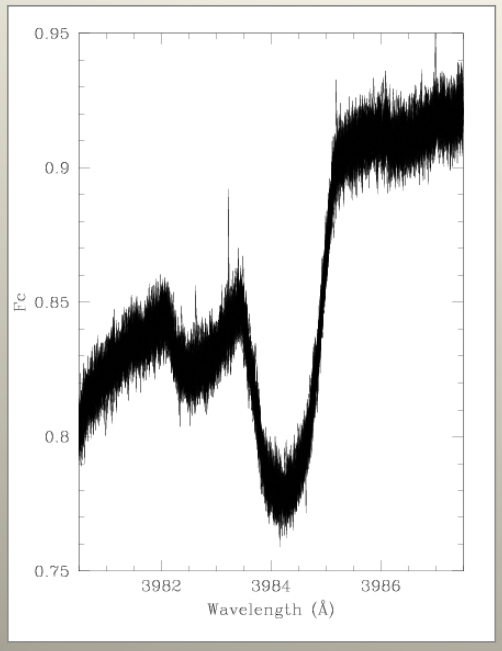
1 full night plus two 0.5 nights lost in the first run due to clouds (first time since 2006 in Chilean summer). A few technical problems switching from HAM (high-resolution mode, R=114000) to EGGS (high efficiency mode, R=80000).

No other observation (in particular, SOPHIE proposal was not accepted).

SRa04 (Oct. 6-Nov. 29)
Observations CoRoT-HARPS non simultaneous

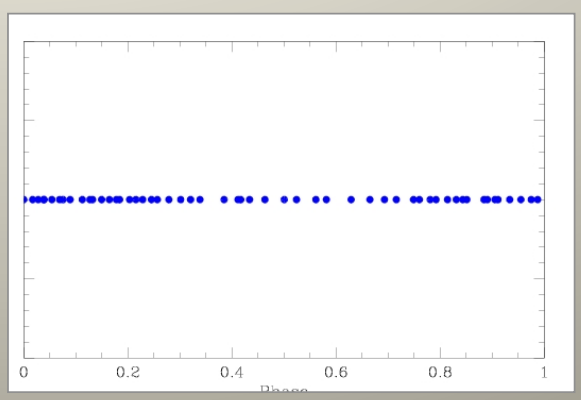
HD 45546	**5.04**	**B2V**	Continuous monitoring, “slow variations” N0 data. LPV already known *(Telting et al. 2006*)
HD 45418	**6.49**	**B4**	Continuous monitoring, “fast variations” N0 data
HD 45975	7.46	HgMn	Full coverage of the rotational period (N0 data)
HD 45398	6.84	K0	Continuous monitoring, RV variations
HD 45517	7.56	A0	1 single high SNR spectrum

Analysis of the N0 data as courtesy from Reza Samadi, very useful in selecting most promising targets



HD 45975

HARPS in EGGS mode



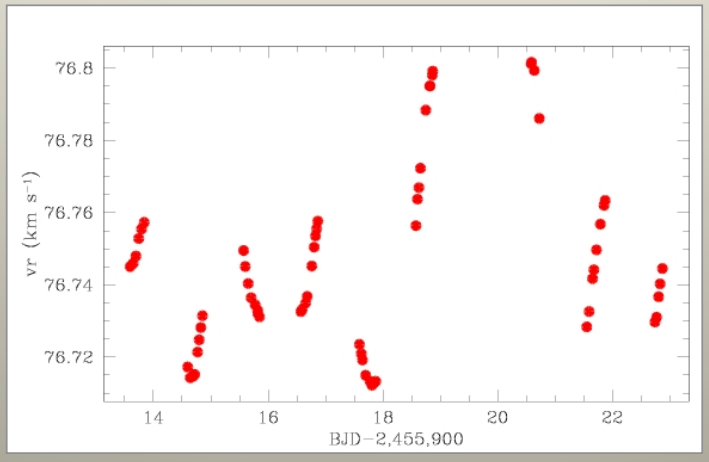
Raw spectra, no clear variation.

Phase coverage almost perfect after the first run (see figure), perfect after the second

HD 45398

Radial velocity variations 70 m/s peak-to-peak.

HARPS in HAM mode



SRa05 (Dec. 2- Jan. 9)
Simultaneous CoRoT-HARPS observations

HD 49566	7.71	G5	1 spectrum high SNR
HD 48784	6.66	F0	1 spectrum high SNR. No clear LPV archival data.
HD 48752	8.39	B9	1 spectrum high SNR. Double or multiple star
HD 48977	5.92	B2	1 spectrum high SNR
HD 49429	6.93	K0	1 spectrum high SNR

Observation of seismo targets in the exo-field

V588 Mon	9.75	A7	Pre-main sequence Delta Sct star in NGC 2264
V589 Mon	10.3	F2	Pre-main sequence Delta Sct star in NGC 2264

For both stars 3 high SNR spectra (30 min exposure time) in the whole run.

Lack of bona-fide targets matching the LP profiles

LRa06 (since Jan. 12, 2012)
Observations HARPS-CoRoT non-simultaneous

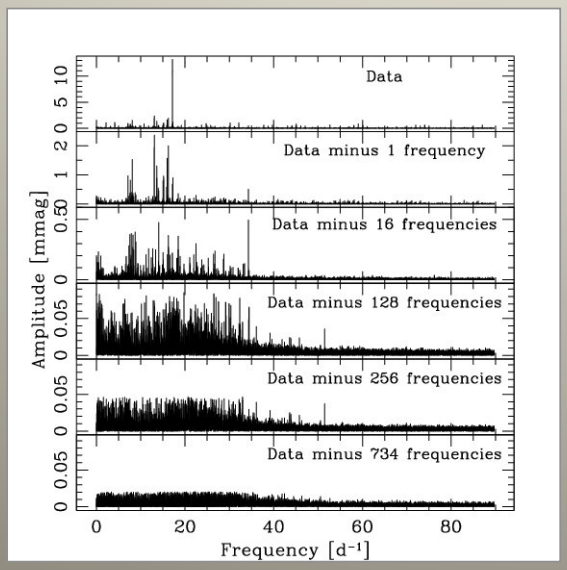
HD 49933	5.77	F2	Already observed with HARPS. “Well-known” solar-like
HD 50230	8.95	B3	g-mode spacing from CoRoT data only *(Degroote et al., Nature)* 2 spectra to check binarity. Second paper based on HARPS data in the refereeing process *(Degroote et al.)*
HD 49385	7.89	G0	1 high SNR spectrum
HD 49585	**9.06**	**Be**	**1-2 spectra per night**
HD 49608	7.77	G5	1 high SNR spectrum

Previous CoRoT targets observed with HARPS

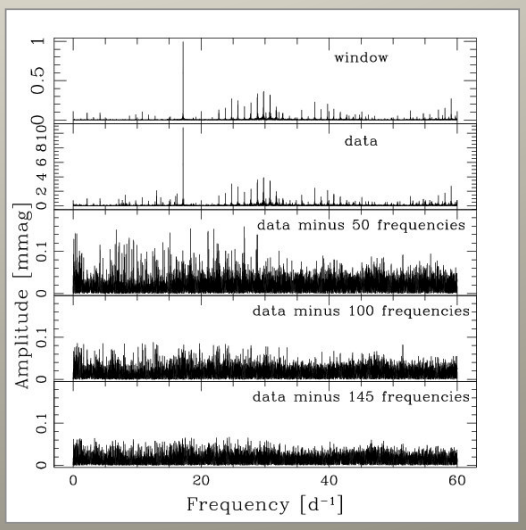
HD 43913 7.88 Previously observed Be star without HARPS monitoring. 1-2 spectra per night.

HD 50870 8.88 Previously observed Delta Sct star. Binary. Paper in the refereeing process.

Original CoRoT data (32 sec)



Original CoRoT data sampled as *Kepler* ones (30 min)



SOME IMPLICATIONS FOR FUTURE CoRoT POINTINGS

Need for good seismic targets expected to show clear line profile variations. In absence of them, very difficult to re-submit a new LP supporting the CoRoT second extension.

Radial velocity measurements of (sub)giants are not a self-consistent project. With the length of HARPS runs, we can just obtain RV amplitude and nu_max. Quite impossible to measure separations.

Radial velocity measurements of dwarfs would require short cadence spectra. Since it is a must to observe many stars for the LP scientific profile, the observation of just one (bright!) target weakens the proposal. Moreover, still limited access to physical info, amplitude and nu_max only.

Next observing runs: July 3-13 and July 23-28. Around the expected eclipse of HD 169689 (July 20).

Last observing runs: in December 2012 and January 2013 (not scheduled yet).