



**10th Corot Week  
Nice, June 5-9, 2006**

**List of posters and abstracts**

**Author(s)** : ALIBERT, Y.

**Title** : Monte-Carlo calculations for planet formation : predictions for COROT

**Abstract** : We present Monte-Carlo calculations based on extended core-accretion planet formation models taking into account disk structure and evolution and migration of the protoplanet. These models lead to giant planet formation timescales compatible with disk lifetimes. For different initial conditions, we calculate the evolution of a disk and an embryo that may form a giant planet. The initial conditions are in particular the disk mass, disk lifetime and metallicity of the system.  
Using observed distributions for these initial conditions, and taking into account the observational bias introduced by radial velocity surveys, we will compare in a statistical way the results of our models and the population of know extrasolar planets. Finally, we will present the predictions of our model for COROT.

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**Author(s)** : ALMENARA VILLA, J.M. & DEEG, H.J.

**Title** : Comparison of false alarm rejection methods used in CoRoT Blind Test 2

**Abstract** : Actual transit searches provide a large number of planet candidates. In order to reduce the number of candidates for follow-up observations, there exists a number of tests for candidate lightcurves, of which several have been applied in our analysis of lightcurves from COROT blind test 2. These tests analyze parameters like transit duration, depth, stellar density, transit shape and color dependence of the candidates transits. In this poster we show a comparison of the test's classification of lightcurves into possible planets or false alarms.

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**Author(s)** : CARONE, L.

**Title** : Automatic transit detection software applied on CoRoT blind test light curves

**Abstract** : An automatic transit detection algorithm was developed in preparation for the space mission CoRoT. As detection algorithm a BLS fitting algorithm and a variance analysis was used. In addition two different filtering techniques (trend filtering and harmonic fitting) were implemented in order to improve the SNR of transit signals. A Monte Carlo Analysis and theoretical studies were carried out in order to investigate the significance and distribution of the statistic of the BLS algorithm to test the stability and reliability of the implemented transit search method. The transit detection algorithm was applied to simulated CoRoT blind test data which proved that the algorithm is ideally suited to detect periodic signals in light curves. In addition the algorithm was tested with BEST (Berlin Exoplanet Search Telescope) real light curves of CoRoT target stars observed during the years 2001-2003 revealing the existence of interesting events which cause periodic signals in the light curves like variable stars and binary star systems.

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**Author(s)** : CHADID, M.

**Title** : Nonradial pulsation in COROT-field RR Lyrae stars: The Blazhko effect and multiple modes

**Abstract** : "RR Lyrae stars were considered to be prototypes of pure radial pulsators. Although The photometric and spectroscopic properties of the RR Lyrae stars have been studied for more than a century, the nature of their pulsations is still mysterious, it is clear that we cannot claim to understand RR Lyrae pulsations without an explanation of the so-called Blazhko effect, a long-term periodic modulation of the pulsation light curve observed in many RR Lyrae stars. Thus, RR Lyrae have a decisive potential in the context of the COROT mission.

The Blazhko period is typically determined to be about 100 times longer than the 0.2-1.2 d pulsation period of individual RR Lyrae stars. Approximately 20-30 % of the RRab stars (which exhibit fundamental mode, high amplitude pulsations) and 2% of the RRc stars (which exhibit first overtone, low amplitude pulsations) show the Blazhko effect, and the amplitude modulations vary with a typical value of 30% for light amplitudes from 0.2 to 2 mag (Alcock et al. 2000 AJ 542, 257). None of the current theoretical models are able to explain this effect without invoking nonradial pulsations in the Blazhko stars. Because of the long periods and small amplitudes of the predicted nonradial modes, their detection is extremely challenging. Recently, Chadid et al. (1999, A&A 352, 201), using spectroscopic data spread poorly over the Blazhko cycle, claimed for the first time the detection of nonradial modes in RR Lyrae itself. They reported a triplet structure in the power spectrum, with a separation with respect to the central radial

frequency equal to the Blazhko frequency (0.3 mHz), but with a poor signal-to-noise ratio. One year later, Moskalik (2000, in ASP Conf.Series 203 p:315) suspected the presence of nonradial modes in RRc stars observed within the context of the OGLE project. He claimed RRc stars with discrete frequency components very close to the main pulsation period (Two frequencies and unequal spacing of three frequencies), but this result was tentative due to the small number of stars observed to have this property.

In order to clearly identify those very close frequency components, to confirm the nonradial pulsation and to potentially detect additional nonradial frequencies, it is mandatory to observe with high precision during at least 1.5 Blazhko period [at least 120 days] with a frequency resolution of 0.1 mHz. These criteria fit well within the COROT Core Programme (Seismology fields).

Due to their low occurrence, RRd stars (fundamental and first overtone double mode pulsators) are still very poorly known. Because of the high number of targets to probe and the required frequency resolution estimated to 0.5 mHz, COROT Short Runs and the Specific Windows (exoplanet fields) contexts seem appropriate for this study. Moreover, our goal here is to confirm the first and second overtone double mode RR Lyrae star suspected by Alcock et al. (2000) and the second overtone mode suspected by Alcock et al. (1996, AJ, 111, 1146)."

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**Author(s)** : CUNHA, M.

**Title** : On the understanding of the mechanism responsible for the excitation of rapid oscillations in cool Ap stars

**Abstract** : "Linear, nonadiabatic calculations in standard models of cool Ap stars have so far failed to predict the rapid oscillations observed in roAp stars. A non-standard model, with envelop convection suppressed, has been proposed by Balmforth and collaborators in 2001. Based on this model, a theoretical instability strip (TIS) for roAp stars has been published by Cunha in 2002. Test of the TIS has so far been limited by the relatively small number of roAp stars known.

As result of the COROT additional program it is expected that a number of new roAp stars will be discovered. These, in turn, will put additional constraints to the TIS. In the poster we describe the key ingredients involved in the excitation of rapid oscillations in roAp stars. Moreover, we show how these affect the TIS and, consequently, anticipate what new information about the models may be gained as result of the detection of new roAp stars by COROT."

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**Author(s)** : DE LA REZA, R., CHAVERO, C., HUBERT, A.M., NEINER, C., TORRES, C.A.O. & DA SILVA, L.

**Title** : Corot and Spitzer: a Strategy to Detect Planets/Protoplanets in Debris Disks

**Abstract** : *not available yet*

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**Author(s)** : DEEG, H.

**Title** : Corot Blind Test 2. Methods and results of the IAC team

**Abstract** : In the Corot blind test 2 (BT2), 236 simulated lightcurves of planet candidates were distributed to participating teams. In contrary to BT1, the curves were simulated in the 3 COROT band-passes, all of them contained some transit-like event. We describe the methods and results obtained by the Team at IAC.

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**Author(s)** : DVORAK, R.

**Title** : The detection of planets in the 1:1 resonance

**Abstract** : When a giant planet moves in the habitable zone with a low eccentric orbit it is possible that Trojan planets and also planets in exchange orbits are present. We try to find out a mechanisms to detect them

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**Author(s)** : GILLON, M.

**Title** : Transit photometry with MCS deconvolution method

**Abstract** : In this poster, we present the MCS deconvolution method adapted to high-precision photometry in crowded fields. We analysed with this new method photometric data of transits for several OGLE exoplanets, and our results are presented (light curves parameters). These results lead to the conclusion that MCS is perfectly suitable for the photometric follow-up of exoplanet candidates detected by CoRoT.

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**Author(s)** : GOZDZIEWSKI, K.

**Title** : Dynamical analysis of the radial velocity data

**Abstract** : We introduce a method of the dynamical analysis of the radial velocity measurements that is based on the KAM theorem and the Genetic algorithm as the optimization tool. An application to the observations of stars hosting multiplanet systems is presented.

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**Author(s)** : KOSTOGRYZ, N.

**Title** : The optical parameters of nonisothermal giant planet atmosphere

**Abstract** : There were worked out the method of the optical parameters definition of the non isothermal giant planet atmosphere using the intensity of Raman scattering details. In such a way using observational data of giant planet atmosphere there were obtained spectral mean of ratio aerosol scattering part to gas scattering part of effective optical depth, the means of ratio absorption part to scattering part of effective optical depth and also the real mean of single scattering albedo of aerosol part.

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**Author(s)** : LAMMER, H.

**Title** : The exoplanet evaporation boundary

**Abstract** : We investigate for the first time the orbital distance which selects Jupiter-like exoplanets in hot gas giants which can lose their whole atmosphere by Coronal Mass Ejection's or thermal evaporation if they are not protected by strong magnetic fields or by IR-cooling species in their upper atmospheres, with planets at orbits beyond the evaporation boundary. By knowing the evaporation boundary as a function of stellar spectral-type we will know if Uranus-like exoplanets or Super-Earth's discovered by CoRoT are origin and not remaining parts of evaporated gas giants.

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**Author(s)** : LATHAM, D.

**Title** : The Kepler Input Catalog

**Abstract** : The Kepler mission will monitor 170,000 planet-search targets during the first year, and 100,000 after that. The Kepler Input Catalog (KIC) will be used to select optimum targets for the search for habitable earth-like transiting planets. The KIC will include all known catalogued stars in an area of about 177 square degrees centered at RA 19:22:40 and Dec 44:30 ( $l=76.3$  and  $b=13.5$ ). 2MASS photometry will be supplemented with new ground-based photometry obtained in the SDSS g, r, i, and z bands plus a custom filter centered on the Mg b lines, using KeplerCam on the 48-inch telescope at the Whipple Observatory on Mount Hopkins, Arizona. The photometry will be used to estimate stellar characteristics for all stars brighter than  $K \sim 14.5$  mag. The KIC will include effective temperature, surface gravity, metallicity, reddening, distance, and radius estimates for these stars. The CCD images are pipeline processed to produce instrumental magnitudes at PSI. The photometry is then archived and transformed to the SDSS system at HAO, where the astrophysical analysis of the stellar characteristics is carried out. The results are then merged with catalogued data at the USNOFS to produce the KIC. High dispersion spectroscopy with Hectochelle on the MMT will be used to supplement the information for many of the most interesting targets. The KIC will be released before launch for use by the astronomical community and will be available for queries over the internet.

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**Author(s)** : MATHIS, S.

**Title** : Secular Hydrodynamics of rotating stars

**Abstract** : The purpose of this contribution is to present the modelling of the rotational transport which occurs in stellar radiation zones, through the combined action of the meridional circulation and of the turbulence generated by the shear of differential rotation (cf. Zahn 1992, Maeder & Zahn 1998, Mathis & Zahn 2004). The turbulence is assumed to be anisotropic, due to the stratification, with stronger transport in the horizontal directions than in the vertical. Moreover, we take fully into account the non-stationarity of the problem, which enable us to tackle the rapid phases of evolution. The system of partial differential equations, which govern the transport of angular momentum, heat and chemical elements, is presented with the first results of the associated numerical simulations. Finally, we discuss physical processes which govern each type of transport and we present the tools we have developed to understand them.

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**Author(s)** : MEDHI, J.B., MESSINA, S. , PADMAKAR PARIHAR, PAGANO, I. & MUNEER, S.

**Title** : Search for chromospherically active stars in the COROT fields

**Abstract** : We report on the results of a survey for chromospheric activity of late-type stars in the fields of the COROT space mission. The presence or absence of excess H<sub>alpha</sub> emission determined by using spectral subtraction technique was used to characterize the chromospheric activity level. Our spectroscopic survey reveals that indeed substantial number of late-type COROT stars (about 15%) have a very active chromosphere. We also give an accurate MK classification, obtained by means of a cross correlation technique, of the 181 stars in our sample, a valuable information for COROT main as well as additional science programs.

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**Author(s)** : MIGLIO, A., MONTALBAN, J. & THEADO, S.

**Title** : Structure and Evolution of Gamma Dor stars

**Abstract** : Gamma Dor stars are located in a very interesting region in the HR diagram: convective envelope change from being very deep for lower masses to being very shallow at higher masses in the instability strip. Since the currently accepted excitation mechanism is the "convection blocking", the instability strip for Gamma Dor must be sensitive to physical processes that affect the depth of the convective region as well as the physical properties close to the bottom of the convective envelope. We present a study of the effects of treatment of convection (FST/MLT) and chemical transport (microscopic and macroscopic) on the location of the convective zone. Gamma Dor are g-modes pulsators and therefore their eigenfunctions and frequencies are sensitive to the central region of the star. So we also analyze how different transport processes and their particular description in the evolutionary code, affect the structure of the star near the center, and how these effects are reflected in the oscillation frequencies.

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*To be confirmed*

**Author(s)** : MOUTOU, C.

**Title** : M dwarfs in the corot/exo fields

**Abstract** : *not available yet*

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**Author(s)** : PAPARO, M.

**Title** : Hungarian contribution to the first winter seismo targets

**Abstract** : CCD frames were obtained for the seismo winter targets by the Hungarian 1m telescope from 2005 december to 2006 March. The main target was HD 44195.  
Observations were obtained for HD 43663 and HD 44283, too. We are planning to present our results on the photometric characterization of these stars.

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**Author(s)** : PECNIK, B.

**Title** : Comparative protoplanetary dynamics of hot Jupiters

**Abstract** : This work investigates the stability properties of the complete set of isothermal protoplanetary equilibrium solutions (Pecnik & Wuchterl, A & A, 2005). To perform a non-linear stability analysis, we introduce a fluid-dynamics numerical model. We inspect entire solution set and find five basic dynamical modes: oscillation, pulsation, transition, ejection, and collapse. We find that a subcritical cores can experience a whole diversity of dynamical phenomena. This could influence on how the protoplanetary evolution up to critical core-mass is presently seen. We compare the dynamical protoplanetary characteristics of Jupiter like orbits to those of 16 day orbit, around solar-type star.

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**Author(s)** : PILAT-LOHINGER, E.

**Title** : The influence of giant planets near the 5:2 resonance on the habitable zone of a sun-like star

**Abstract** : *not available yet*

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**Author(s)** : RIPEPI, V., BERNABEI, S., MARCONI, M., RUOPPO, A., PALLA, F., MONTEIRO, MJPG & MARQUES, J.P.

**Title** : Delta Scuti Pulsation in the Herbig Ae star VV Ser

**Abstract** : VV Ser is a Herbig Ae star located in the continuous viewing zone of COROT in the center direction. The photometric observations presented in this poster, allowed us to extract 6 pulsation frequencies for VV Ser. We



report the comparison with an extensive set of asteroseismological models which allowed us to estimate the position of VV Ser in the HR diagram as well as its mass. We also show how VV Ser would be a good target for a possible COROT additional program.

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**Author(s)** : RIPEPI, V., CUSANO, F. & ALCALA, J.M.

**Title** : Stellar parameter for PMS stars in the young open cluster Dolidze 25

**Abstract** : Dolidze 25 is a low metallicity young open cluster located in the anticenter direction, near the two primary targets HD 49933 & HD 49434. It therefore will be observed continuously for 150 d during the Second Long Run of COROT. Selected stars in Dolidze 25 are object of an accepted additional program proposal which aims at studying the Pre-Main-Sequence stars present in the cluster and in particular the PMS delta Scuti ones. In this poster we present the characterization of the objects which will be observed by COROT as well as the properties of other fainter objects belonging to the cluster. New possible targets to be observed with COROT are also suggested.

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**Author(s)** : ROXBURGH, I.

**Title** : The Autocorrelation Function of Stellar p-mode Measurements and its Diagnostic Properties

**Abstract** : The basic properties of acoustic wave propagation in stellar interiors can be analysed from the autocorrelation function (ACF) of intensity (or velocity) observations without measuring the resonant p-mode frequencies. We show how the strength of acoustic wave refraction in the stellar core, or forward acoustic amplitude, can be measured from a modulation in the ACF. This is the basic physical quantity which governs the so-called "small frequency separations", and its measurement from the ACF can be used for determining the small frequency separations when the data is of insufficient quality for a reliable identification of the stellar p-mode frequencies.

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**Author(s)** : STAHN, T.

**Title** : Fourier Analysis of Gapped Time Series of Stellar Oscillations

**Abstract** : The Fourier analysis of gapped time series is not straightforward because the convolution by the window function introduces correlations between Fourier amplitudes measured at different frequencies. We present an expression for the joint probability density function of the Fourier spectrum of a gapped time series. This enables us to derive maximum likelihood estimates of the parameters of stellar oscillations. We apply this technique to a WET time series of PG1159-035 from 1989.

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**Author(s)** : SUÁREZ, J.C.

**Title** : Combining Ground- and Space based Photometry of the delta Scuti star eps Ceph

**Abstract** : *not available yet*

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**Author(s)** : THOUL, A. & THIRION, A.

**Title** : BetaDat: A Beta Cephei Database

**Abstract** : *not available yet*

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