far IR wavelengths, while active cores have extended and enhanced 4.5μm emission.

In this work, we analyze CO(2-1), 13CO(2-1), and CO(2-1) lines, and mid- and far-infrared data towards the EGOS (Extended Green Objects) G341.23-0.27 and G341.22-0.26(a), projected onto the IRDC G341.24-0.27.

[1] Instituto Argentino de Radioastronomía, CONICET, Argentina.
[2] Facultad de Ciencias Astronómicas y Geofísicas de La Plata, Argentina.
[3] Departamento de Astronoímia, Universidad de Chile.

FINDING PROTO-SPECTROSCOPIC BINARIES: PRECISE MULTI-EPOCH RADIAL VELOCITIES OF 7 PROTOSTARS IN ρ OPHIUCHUS

P. Viana Almeida[1,2,3], C. Melo[2], N. C. Santos[1], P. Figueira[1], M. Sterzik[2], and J. F. Gameiro[1]

Stars in the solar neighborhood are mostly found in multiple systems. While the existence of stellar companions at visual distances can be easily explained as a normal outcome of the star formation process itself, it is still unclear how spectroscopic companions are actually formed. If they are a by-product of the initial fragmentation of molecular clouds, or resultant from dynamical evolution within pristine multiple systems is still an open question in star formation. To uncover a young spectroscopic binary would be therefore an invaluable clue for understanding the mechanisms and the time scales involved in their formation. Aiming at finding such young spectroscopic companions, we present a near-IR high resolution (R $\sim$ 60000) multi-epoch radial velocity survey of 7 young stellar objects in the star forming region ρ Ophiuchus. The radial velocities of each source were derived using a 2-D cross-correlation function designed to deliver the radial velocity of the target relative to the zero-point established by the earth's atmosphere. We found that the spectra of the protostars in our sample agree reasonably well with predicted stellar photospheric profiles indicating that the radial velocities uncovered are of stellar nature. Three of the targets analyzed give us hints that the first proto-spectroscopic binaries might have been found. If confirmed, it will bring an important piece into the (binary) star-formation puzzle, namely, that multiplicity at sub-AU scale starts (or not) at birth. Our preliminary binary fraction of $\sim$71% is also in line with the notion that multiplicity is very high at young ages and therefore it might be a product of star-formation.

[1] Centro de Astrofísica, Universidade do Porto, Rua das Estrelas, 4150-762 Porto, Portugal.
[2] ESO, Alonso de Cordova 3107, Casilla 19001, Vitacura, Santiago, Chile.
[3] Universidade Federal de Minas Gerais, Avenida Presidente Antônio Carlos, 6627 - Ventosa, Belo Horizonte - MG, 31270-901, Brasil, palmeida@fisica.ufmg.br.

STAR AND PLANET FORMATION IN THE ERA OF THE SUBMILLIMETER OBSERVATORIES SMA/ALMA

L. Zapata[1]

I present the recent advances and challenges on the star and planet formation studies in era of the submillimeter observatories: the Submillimeter Array (SMA) and the Atacama Large Millimeter/Submillimeter Array (ALMA). These observatories now provide angular resolutions similar to those obtained in the optical regimen allowing to study the obscured innermost parts of the circumstellar disks where the planet and star formation are taken place. When ALMA is finished, its sensivity and high angular resolution might reveal planets around closeby young stars just in the process of formation. This will open a new venue for the understanding on the origin of our own solar system.

[1] Centro de Radioastronomía y Astrofisica (CRyA), UNAM.

STARS & STELLAR SYSTEMS

THE BIOSUN PROJECT: AN ASTROBIOLOGICAL APPROACH TO STUDY THE ORIGIN OF LIFE

X. C. Abrevaya[1], A. Hanslmeier[2], M. Leitzinger[2], P. Odert[2], J. E. Horvath[1], I. Ribas[3], D. Galante[4], and G. F. Porto de Mello[5]

During the early ages of the Earth the magnetic activity of the young Sun was much stronger than that of the present Sun, in particular for radiation emitted below 1700 Å. Such enhanced radiation fluxes could play a role in the evolution of planetary atmospheres, their surface conditions and in the origin and evolution of life. Solar stellar analogs could provide information about the characteristics of the young Sun, and therefore this radiation environment.

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The objective of this project is to focus on the radiation emission features of the young Sun through solar stellar analogs to 1) Characterize the radiation environment of the early Earth and other planetary bodies of the Solar System that are or could have been suitable for life. 2)Reproduce this radiation environment under laboratory simulated conditions to explore: Whether cells could survive at that level of radiation on the early Earth confronting that with the microbial fossil record. Early Mars and Europa will be also tested; b) The possibility of "transfer" of microorganisms between Mars-Earth or Venus-Earth at that time. For Mars studies we consider as a model the Nakhla meteorite and halites; c) The formation, inflow and outflow of some prebiotic molecules in the early planetary conditions. Finally, the experimental approach will be carried out exposing microorganisms/molecules to this environments under laboratory simulated conditions, according to the data obtained previously.

[1] Nucleo de Pesquisa em Astrobiologia/IAG - USP, Rua do Matao 1226, Cidade Universitária, 05508-090 Sao Paulo, Brazil (abrevaya@iafe.uba.ar).
[2] Institute of Physics, Karl-Franzens-Universitat Graz, Graz, Austria.
[3] Institut de Ciencies de l'Espai/CSIC, Barcelona, Spain.
[4] CNPEM/LNLS, Campinas, Sao Paulo, Brazil.
[5] Observatorio do Valongo/UFRJ, Rio de Janeiro, Brazil.

MULTI-EPOCH INFRARED SPECTROSCOPY OF μ CENTAURI PRIOR TO OUTBURST

G. Aguayo[1], R. E. Mennickent[1], S. Otero[2], and A. Granada[3]

We present 9 L-band spectra of the Be star μ Cen obtained with the VLT ISAAC distributed along 1 year during an epoch of relative photometric quiescence prior to a $\Delta V = 0.4$ mag outburst. Visual estimates for the V magnitude obtained during the last 13 years are also presented. The L-band region from 2.9 to 4.1 microns contains important diagnostic Hydrogen lines that are sensitive to changes in the optical depth conditions of the star envelope. We chose μ Centauri as our target due to its brightness and short recurrence time of relatively well documented outbursts in order to study the evolution of the Be star envelope along time including matter ejection episodes. We measured line strengths, line widths and constructed a line flux ratio diagram as the one made by Lenorzer et al. (2002). Despite the fact that we found the star into a quiescence period, we observe significant and monotonic changes in emission line strength of Bracket-α and Pfund-γ lines relative to Humphreys series. We interpret this variability as changes in the opacity of the circumstellar envelope, moving from an optically thin to an optically thick condition just prior to a major outburst.

[1] Universidad de Concepción, Departamento de Astronomía, Casilla 160-C, Concepción, Chile. (gusaguayo@astro-udec.cl)
[2] Buenos Aires,Argentina;American Association of Variable Star Observers (AAVSO), Cambdrige, MA, USA.
[3] Geneva Observatory,University of Geneva, Switzerland.

DETERMINATION OF LI ABUNDANCE IN SOLAR TYPE STARS OF INTERMEDIATE BRIGHTNESS

E. M. Amazo-Gómez[1], B. Hernandez-Águila[2], M. C. Dagostino[2], E. Bertone[2], and V. de la Luz[2]

The determination of the lithium abundance in stellar atmospheres is of fundamental importance in multiple contexts of contemporary astrophysics. On the one hand, the lithium present in stars with global sub-solar metal abundances provides a strong restriction on the abundance of this element as a result of primordial nucleo-synthesis. On the other hand, Li can be an age indicator for stars with convective envelopes. Additionally, Li abundance appears to be correlated with the presence of sub-stellar companions. We present preliminary results of a project aimed at determining the Li abundance in an extended sample of solar-like stars (spectral type G and luminosity class V) of intermediate brightness. High resolution spectroscopic data (R=65000) were obtained with the CanHiS echelle spectrograph on the 2.11m telescope of the Guillermo Haro Observatory in Cananea, Sonora, Mexico. We report the equivalent widths of a first sub-sample of 33 stars.

[1] Observatorio Astronómico Nacional de Colombia, OAN, Universidad Nacional de Colombia, Campus Bogotá, Bogotá, Colombia (emamazog@unal.edu.co).
[2] Instituto Nacional de Astrofísica, Óptica y Electrónica, INAOE, Tonantzintla, Puebla, México.

ACCRETION DISC MAPS OF V2051 OPH ALONG OUTBURST: ADDITIONAL EVIDENCE IN FAVOR OF THE MASS-TRANSFER INSTABILITY MODEL