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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.

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MULTI-EPOCH INFRARED SPECTROSCOPY OF μ CENTAURI PRIOR TO OUTBURST

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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.

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DETERMINATION OF LI ABUNDANCE IN SOLAR TYPE STARS OF INTERMEDIATE BRIGHTNESS

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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.

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

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Dwarf novae (DNs) are mass-exchanging binaries showing repeated outbursts, lasting from days to weeks and recurring on timescales from weeks to years, in which their accretion discs brighten by factors 20-100 either because of a thermal-viscous instability cycle in the accretion disc (the DI model) or as a consequence of an instability in the mass-donor star leading to a burst of enhanced mass-transfer (the MTI model). While the issue seemed to be settled in favor of the DI model, the last decade has progressively provided compelling evidence in support of the idea that there is a group of DN the outbursts of which are powered by MTI. V2051 Oph is one of the DNs yielding stronger evidence in favor of the MTI (Baptista et al. 2007). Here we report eclipse mapping analysis of velocity-resolved ($|v| = 400 - 1000\,km/s$) $H\beta$, $HeI\,\lambda4922$ and nearby continuum light curves of V2051 Oph on 4 consecutive nights along its 2002 July outburst, based on spectroscopy collected with the 1.5 m ESO telescope. The outburst starts with a ring of enhanced emission at the circularization radius, which spreads inwards and outwards with velocities of $\geq -0.9\,km/s$ and $+0.2\,km/s$, respectively, to form an extended bright disc in less than a day. The outburst maximum $H\beta$ map shows two asymmetric arcs reminiscent of the spiral arms seen in other outbursting dwarf novae. Assuming a distance of 108 pc, the disc temperatures at outburst maximum barely reach the critical temperature above which the gas should be while in outburst according to DI model, and remain below that limit on all other nights. The results are at odds with predictions of the DI model, but are in good agreement with the expected response of a viscous disc to a burst of dense, enhanced mass-accretion through its sparse outer regions.

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SPECTROSCOPY OF THE OPEN CLUSTER REMNANT CANDIDATE ESO429-SC02

M. S. Angelo[1], W. J. B. Corradi[1], J. F. C. Santos Jr.[1], and F. F. S. Maia[1]

In this study we intend to assess the physical nature of the open cluster remnant (OCR) candidate ESO429-SC02. In a previous work, the method of characterization devised by Pavani & Bica (2007) failed to characterize the object as an OCR or as an asterism, classifying it as a possible OCR. We carried out multi-object spectroscopy of 31 stars in its inner area ($r \lesssim 4'$) using GMOS/GEMINI-S (resolution $R \approx 2000$). We cross-correlated (IRAF's FXCOR task) our science spectra with all templates from ELODIE and PHOENIX libraries to obtain radial velocities and atmospheric parameters. We also employed 2MASS photometric data and proper motions from UCAC4. Individual distances via spectroscopic parallax and reddening values were derived for our science stars. In order to identify candidate member stars, we performed a 5-dimensional sigma-clipping routine using positional an kinematical data to interactively reject outliers and selected those stars well fitted by a Padova isochrone in $K_s \times (J - K_s)$ and $(J - H) \times (H - K_s)$ diagrams. Although a isochrone fitting solution was found, individual distances of stars close to the *turnoff point* or to the RGB range from 1.5 kpc to 4.4 kpc; $E(B-V)$ values range from 0.0 to 0.46; $[Fe/H]$ from -0.95 to 0.61 dex and radial velocities from 9 to 64 km/s. Besides, spectral types distribution of candidate member stars along the main sequence and the high dispersion in the parameters derived for them are inconsistent with what is expected for a coeval system. Our results suggest that ESO429-SC02 is a random overdensity of field stars along the line of sight.

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FAST AND SLOW RADIATION-DRIVEN WIND SOLUTIONS USING ZEUS-3D

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Currently, the theory of radiation–driven winds of massive stars possess three known solutions for the velocity and density profiles of the stellar winds, namely: the fast, Ω–*slow* and δ–*slow* solutions. In order to confirm their stability we use a time–dependent numerical hydrodynamic code called ZEUS-3D, and then we compare their results with the stationary solutions from our numerical hydrodynamic code. ZEUS-3D needs an initial trial solution to start to integrate, for this we use the stationary solution (from our code) or a β–law for the velocity field. In both cases we obtain the same results. Fast and both slow stationary solutions are

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