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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 DN's yielding stronger evidence in favor of the MTI (Baptista et al. 2007). Here we report eclipse mapping analysis of velocity-resolved ( $|v| = 400 - 1000 \text{ km/s}$ )  $H\beta$ ,  $HeI \lambda 4922$  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  $\geq -0.9 \text{ km/s}$  and  $+0.2 \text{ km/s}$ , 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

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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 and 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,  $\Omega$ -slow and  $\delta$ -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  $\beta$ -law for the velocity field. In both cases we obtain the same results. Fast and both slow stationary solutions are