

Using a technique modelled after Marraco, Vega, & Vrba (1993, AJ, in press) we have separated the foreground contribution of both the color excesses and the polarizations.

We choose stars considered to belong to the aggregate but being just at the front border. We call them "frontside" stars. They are used to model the contribution of the *foreground* excess and polarization that subsequently will be removed from the remaining member stars to determine the *intracluster* values of these quantities.

We can decide that the observed polarization is not intrinsic, but rather is due to the interstellar material.

We find that IC 2944 follows the general trend of the polarization (projected magnetic field) directions in the zone. We also find that the intra-cluster component of the magnetic field direction is randomly distributed.

#### DIFFERENTIAL *uvby* PHOTOMETRY OF SOUTHERN Be STARS. HIGHLIGHTS FROM THE RECENT ANALYSIS OF LTPV DATA

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We present preliminary results of an analysis of 8 years photoelectric monitoring of 19 southern Be stars, obtained in La Silla by the ESO Working Group "Long Term Photometry of Variables" (LTPV) led by Dr. Chris Sterken, Brussels. In our sample we detected the following main classes of Be star variability: eclipsing binaries (1 certain and 1 suspected case: V505 Mon and FX Lib); eruption-like events (3 cases: 27 CMa,  $\omega$  CMa and  $\beta_1$  Mon); long-term variations with amplitude  $\geq 0^m.1$  and time scales years to decades (8 cases: 27 CMa,  $\omega$  CMa, MX Pup, FX Lib, V923 Aql, V1294 Aql,  $\epsilon$  Cap and PP Car), random short-term variations with time scales days to weeks (12 cases: V505 Mon, 10 CMa,  $\omega$  CMa, FY CMa, MX Pup, FX Lib, HD 173219, V923 Aql,  $\epsilon$  Cap, HR 2545, o Pup and PP Car); coherent oscillations with periods between 8 and 800 days (5 cases: 10 CMa, FY CMa,  $\epsilon$  Cap, HR 2545 and o Pup) and incoherent oscillations with periods 3–30 days, lifetime  $\sim 10$  cycles (3 cases:  $\omega$  CMa,  $\epsilon$  Cap and HR 4074). The three stars  $\lambda$  Eri, HR 2142 and HR 3858 remained nearly constant within  $\lesssim 0^m.05$ .

As highlights of our analysis we may mention: (i) for the 54<sup>d</sup> eclipsing binary V505 Mon a "supercycle" was detected: the shape of the light curve varies with a 1300<sup>d</sup> period; (ii) 27 CMa showed rapid fadings with reddening, probably

due to the ejection of dust envelopes; (iii) in HR 2545 a coherent oscillation with a 14<sup>d</sup>3 period was detected, which is present only in  $\gamma$  and  $b$ , not in the remaining bandpasses at shorter wavelength.

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#### OSCILLATORY LUMINOSITY PROFILES AND PULSARS

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Several very interesting, and not well understood, astrophysical scenarios are associated with a periodic emission of radiation from collapsed compact objects. Pulsars are the most common representative examples of this phenomenon. The rapid variation of luminosity of a young supernova remnant, generally interpreted as due to its rotation, can be alternatively explained as radial oscillations of the compact object.

We used the method proposed by Herrera and collaborators in 1980 to study general relativistic spheres to obtain models describing non-static radiating spheres starting from well known static equations of state.

The present work explores the diffusion limit for the radiation field, with inter-relations between oscillations of the surface of compact objects and their pulsating luminosity profiles.

#### SOUTHERN RS CVN SYSTEMS UBVRI PHOTOMETRY

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The RS CVn are binary systems including dwarf stars from the main sequence, sub-giants or giants of the F, G or K type. Photometric fluctuations can be attributed to large scale photospheric spots discretely distributed on the stellar surface. Magnetic fields associated to these spots are assumed to heat the chromosphere's transition zone and the corona, which becomes evident by emissions in the chro-

mospheric lines, the farthest *UV* and X rays. These magnetic fields are developed by a dynamo action generated in the interaction between rotation and the depth of the convection zone.

For some years, observations have been carried out at Cerro Tololo and Cerro La Silla Observatories as part of a photometric and spectroscopic program. Of all observed systems, more data related to BD-0°210 and V824 Ara systems is available. For both systems the result of data analysis is consistent with the hypothesis of the existence of colder regions in the photospheric surface. In the case of BD-0°210 it can be inferred that at least two spots account for cold regions distribution.

The filling factor and the estimated temperature for both the still region and the spot are shown in the table below. It was possible to obtain this information by applying the Vogt model for spot temperature determination from *V* and *R* color variation.

System	Still Region T°	Spot Temperature	Filling Factor
BD-0°210	5135	3865	22%
V824 Ara	5485	3515	25%

#### OPTICAL STUDY OF LMXBs WITH HIGH TEMPORAL RESOLUTION FROM CASLEO. EVIDENCE OF NON-THERMAL FLARES FROM MXB 1735-44

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We present a search for ultrafast optical variability ( $10^{-7}$  – 10 s) among some LMXBs using MANIA complex attached to the 2.15-m telescope of CASLEO, Argentina. Two flares of 0.25 s duration were recorded from the MXB 1735-44 X-ray burster. Object brightness increased 15–30 times in 0.05–0.06 s, while these flares also displayed fine structure (time scales 0.005–0.006 s, with a confidence level > 95%). Brightness temperatures were obtained for the non-thermal process during accretion of material onto a compact object.

#### IDENTIFICATION OF NEW SYMBIOTIC STARS

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We present optical and near infrared spectroscopy of the stars V417 Cen, V704 Cen, RT Cru, H1-25 and NSV11776 which confirms the symbiotic nature for these systems. The stars RT Cru, H1-25 and NSV11776 are classified for the first time as symbiotics, while V17 Cen is quoted as yellow symbiotic in Steiner, Cieslinski, & Jablonski (1988, CTIO 25th Anniversary Symposium, ASP Conference Series), and V704 Cen as a possible symbiotic in Allen (1984, Proc. ASA, 5, 369). The stars H1-25 and NSV11776 were misclassified as planetary nebulae in Perek & Kohoutek (1967, Catalogue of Galactic Planetary Nebulae) and in Steiner et al. (1988), respectively. RT Cru, on the other hand, is classified as IA (i.e., irregular variable with early (O-A) spectral type) in the 4th edition of General Catalogue of Variable Stars (Kholopov et al. 1985).

We have also obtained *UBVRI* photometry and differential fast photometry (1–2 hours of length) in *V* band for some of these objects. The star RT Cru presents flickering with amplitude ~0.03–0.05 mag and timescales of ~10–20 minutes, while the other stars apparently do not show any variations.

Both, spectroscopic and photometric observations were taken at CNPq/Laboratório Nacional de Astrofísica (LNA), Brazil.

#### FURTHER OCCULTATIONS OF THE CENTRAL STAR IN NGC 2346?

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V651 Mon, the central star of the planetary nebula NGC 2346, is a well known spectroscopic binary with an orbital period of nearly 16 days. It consists of an A-type star and a hot, dense companion (c.f. Méndez & Niemela 1981, ApJ, 250, 240). About ten years ago, the system went into a long series of large optical and infrared variations with a modulation similar to the orbital period (Kohoutek 1982, IBVS 2113; Kohoutek 1983, MNRAS, 204, 92; Méndez, Gathier, & Niemela 1982, A&A, 116, L15; Roth et al. 1984, A&A, 137, L9). These first light fluc-