COMPOSITION OF THE ATMOSPHERES OF COOL WHITE DWARFS

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Optical spectroscopy and *B, V, R, I, J, H,* and *K* photometry of a sample of cool white dwarfs was obtained using the 1.5-m and 4-m telescopes at CTIO. These data have been confronted with energy distributions and line profiles predicted by new model atmospheres suitable for cool white dwarfs that include molecular hydrogen species such as H2, $H2^+$ and $H3^+$ in the equation of state, and new collision-induced opacities. The line profile calculations take into account Stark, resonance and van der Waals broadening. The spectroscopic and photometric data allows us to determine the effective temperatures and atmospheric compositions for these cool degenerate stars. We find that, at low temperatures, all white dwarfs are either hydrogen or helium rich, with not much evidence for intermediate composition.

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SPECTROPHOTOMETRY OF SELECTED PLANETARY NEBULAE OF TYPE I IN THE MAGELLANIC CLOUDS

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We present observations carried out with the CTIO 4-m telescope of the planetary nebulae: N 67, in the Small Magellanic Cloud, N 66, N 97, and N 102 in the Large Magellanic Cloud. They are among the brightest PN in the Magellanic Clouds and have been extensively studied by other authors.

We derive their physical conditions and chemical compositions. These objects are of high electron density and high electron temperature, which makes them excellent probes to study collisional effects on the He I lines, and in particular, the population of the 2^3S level of He I.

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NOVA V2214 OPHIUCHI 1988. A SLOW MAGNETIC NOVA INSIDE THE PERIOD GAP[1]

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We have discovered a coherent photometric modulation in Nova Oph 1988 with period 0.117515 ± 0.000002 d (2.82 hs) which we associate to the orbital period of the underlying binary. This puts the system in the upper side of the gap of the cataclysmic variables (CVs) period distribution. The striking similarity of the orbital light curve with that of AM Her, the photometric and spectroscopic resemblance with the magnetic novae candidates V1500 Cyg and GQ Mus, and the presence of prominent He II lines in the optical spectrum strongly suggest that this is also a magnetic nova. Our discovery makes Nova Oph 1988 the first magnetic nova candidate inside the period gap.

The inclusion of this object in the statistics of novae raises a very interesting scenario. There are presently 4 novae with known orbital period in the range $P_{orb} \lesssim 3$ hs, half of them are lying in the period gap. All these systems are suspect to harbor magnetic white dwarfs. These evidences lead to the following conclusions: *(i)* there is no period gap for novae, *(ii)* magnetic CVs are strongly favoured among novae in this period range. Support for these conclusions and their implications are discussed in the light of thermonuclear runaway models and the hibernation model of classical novae, and of current models to explain the period gap. The different speed class with respect to GQ Mus and V1500 Cyg can be explained in terms of a lower mass ($\sim 0.6\ M_\odot$) for the white dwarf in this system. Our understanding of the evolution of CVs may be considerably improved with a detailed study of this object.

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