variable stars in the same location of the H-R diagram in many respects. Among the features Cepheids do not seem to share with their non-variable counterparts is coronal activity. Ten years ago the X-ray flux limits set by the *Einstein* Observatory for three Cepheids did not settle the question, because the upper limits were at the same level as X-ray fluxes observed in non-variable supergiants.

We report new deep pointed observations of ζ Gem (P = 10 days, F7-G3 Ib) with *ROSAT*. The Cepheid was observed on two separate dates in September and October 1992. No X-ray flux was detected. The upper limits are approximately 5 times lower than previously observed. This means that the soft X-ray luminosity of ζ Gem is below 1×10^{29} erg s^{-1}. In terms of X-ray to bolometric luminosity, this means that this Cepheid is more than 50 times weaker than our Sun, and more than 15 times less luminous than Canopus (F0 Ib) and 11 Pup (F8 II) in X-rays.

These new results seem to indicate that classical Cepheids do not have any hot plasma in their upper atmospheres. This puts severe constraints on the sources of coronal heating in luminous cool stars. These sources seem to be inhibited by the global envelope pulsation, unlike the sources of chromospheric heating which are not affected.

uvby-β PHOTOELECTRIC PHOTOMETRY OF CEPHEIDS

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Simultaneous *uvby-β* photoelectric photometry of several Cepheids stars is presented. M_V values have been determined.

Cox (1974, Rep. Prog. Phys., 37, 563) mentioned that most of the pulsating stars lying in a clearly defined oval region in the H-R diagram (RR Lyrae variables, Classical Cepheids, W Virginis variables, Dwarf Cepheids and Delta Scuti variables) are thought to owe their instability to a common physical mechanism. According to Cox, this oval region is loosely referred to as the "instability strip" and he emphasizes that the classification of pulsating stars into different types seems to be valid.

Jacoby et al. (1992, PASP, 104, 599), has stated that "with only two colors it is not possible to estimate the reddening for individual stars and hence the most common expedient has been to adopt a global reddening correction". Since this latter difficulty can be overcome by the simultaneous photometry attainable at the Observatorio Astronómico Nacional in México, a program was developed with the aim of acquiring *uvby-β* photometric data of the aforementioned variable stars that could become important and that could serve to test the derived period-colo relationships and the derivation of their physical parameters.

The absolute magnitudes reported here have beer determined following the carefully developed calibra tions of Eggen (1985, AJ, 90, 1260) for a much large sample of stars than that presented here. The deter mination of M_V for the nineteen Cepheid stars is a significant contribution to the knowledge of this im portant type of stars.

PERIOD CHANGES AND EVOLUTION IN THE LOWER PART OF THE INSTABILITY STRIP

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Period changes in pulsating variable stars are ex pected from stellar evolutionary tracks inside the Lower Instability Strip. Hence, evolutionary perioc changes must be present in individual stars and mus be observable, at least over long time scales. Thi fact can be used as a test of the evolutionary statu of these stars by comparing the observational an theoretical period change rates. This comparison i carried out for the δ Sct and SX Phe stars using th latest published grids of stellar evolutionary model by Schaller et al. (1992, A&AS, 96, 269) computec for metallicities Z=0.020 and Z=0.001 including th new opacities by Rogers & Iglesias (1992, ApJS, 79 507) and by Kurucz (1991, in Stellar Atmospheres Beyond Classical Models, NATO ASI Series C, Vol 341).

δ SCT STARS REVISED

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An extensive and up-to-date list of δ Sct stars is pre sented. This catalogue is intended to be a compre hensive review of observational characteristics of a the δ Sct stars known until now, including stars cor tained in earlier catalogues together with other newl discovered variables, covering information publishe until August 1993. The corresponding diagrams ar also shown.