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SHORT TALK

CEPHEID VARIABLE STARS IN THE VVV SURVEY

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Classical Cepheid variables play a fundamental role in cosmology through the determination of distance to other galaxies, allowing calibration of the cosmic distance ladder. Within the Milky Way, known classical Cepheids, being relatively young stars, can be used to trace the position of the spiral arms in the vicinity of the Sun. Unfortunately, their position in the Galactic disk results in most classical Cepheids having excessive amounts of reddening, which so far has prevented their discovery in the farthest regions of the Milky Way. In recent years, the Vista Variables in the Vía Láctea (VVV) project has completed a ~ 520 square degree $YZJHK_S$ multi-color, and K_S band multi-epoch survey of the southern Galactic disk and the Galactic bulge, utilizing the VIRCAM camera of the 4.1m VISTA telescope at Paranal Observatory. The greatly diminished extinction in the near-infrared bands enables the discovery of classical Cepheids as far as the far side of the Galactic disk. We have started the VISTA Galactic Cepheid Program (VGCP) in order to find the so far uncovered Cepheid population of the Milky Way. This program has already resulted in the discovery of a twin Cepheid pair behind the Galactic bulge, indicative of a parent open cluster which is completely hidden by the high extinction in the plane. Furthermore, we have discovered classical Cepheids in a thin disk within the volume of the Galactic bulge, a hitherto unknown stellar population in the Milky Way. We present the current status of the VGCP and the follow-up observations that have been initiated with the aim of characterizing the Cepheid variables of the VVV survey, and through them, the far disk of the Milky Way, as well.

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