A SYNOPTIC VIEW OF THE MAGELLANIC CLOUDS:
VMC, GAIA AND BEYOND

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Type-I Cepheids in the Magellanic Clouds as Laboratories of Stellar Physics

Anderson Richard, ESO

Cepheids are sensitive astrophysical laboratories that probe internal mixing processes and convection-pulsation interactions. They occupy a sweet-spot in mass where rotational mixing is a relevant effect without stellar winds dominating. Moreover, the OGLE survey provides high-quality time series of unrivalled duration for thousands of Cepheids, allowing powerful and unique tests of their astrophysical properties. This contribution discusses recent theoretical and empirical insights into Magellanic Cloud Cepheids. First, I describe the predicted effects of rotation on the evolution of LMC and SMC Cepheids and critically assess different predictions. Second, I present results from a time-dependent variability analysis that questions the standard paradigm of interpreting measured rates of period change as indicative of secular evolution. Moreover, newly discovered light amplitude variations challenge the notion of type-I Cepheids as well understood stars. The presentation concludes by discussing the impact of metallicity, evolutionary status, and rotation on the period-luminosity relation, which remains of critical importance for the cosmic distance scale.