

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

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**Gaia DR2 parallaxes and the  
consequences for IRSB distances to  
Magellanic Cloud Cepheids**

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We have a sample of 150 galactic, 37 LMC and 31 SMC Cepheids for which we have data to apply the infrared surface brightness (IRSB) technique, a Baade-Wesselink type technique, which allows us to derive individual distances. In this way we can put excellent constraints on the effect of metallicity on the Cepheid period-luminosity relations in different bands and we find an average distance to the LMC sample in excellent agreement with the recent LMC distance measurement from late type eclipsing binaries. Gaia data release 2 (DR2) on the other hand provides parallaxes for about half of our sample of galactic Cepheids, thus increasing the number of geometric distances to IRSB Cepheids very significantly. We use this expanded sample of galactic Cepheids with direct parallax measurements to recalibrate the IRSB method. We then investigate the consequences of the thus derived distances for the Magellanic Cloud Cepheids and confront it with the LMC eclipsing binaries distance. Finally we check the implication of the revised calibration on our determination of the effect of metallicity on the period-luminosity relations.