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

ESO-HQ, GARCHING BEI MÜNCHEN, GERMANY
September 9-13, 2019

Towards an accurate distance determination: physical parameters of early-type eclipsing binaries in the LMC

Taormina Mónica, Nicolaus Copernicus Astronomical Center (CAMK PAN)

Late-type eclipsing binaries provide very good means for distance determination, but we can observe them no farther than in the Magellanic Clouds. Although early-type binaries were discovered in other galaxies in the Local Group, they cannot be used because of a lack of a firm calibration of the surface brightness - color relation. Our goal is to establish this relation for early-type stars based on high quality spectroscopic and infrared observations of B and O-type detached eclipsing systems in the LMC. It will allow distance determinations accurate to about 2.5% to a single object located well beyond the Magellanic Clouds. Apart from this, we will obtain precise physical parameters of about 20 early-type stars, which can be used for a detailed study of their evolution. This is particularly important for the massive stars for which not many good measurements of the fundamental parameters are available. Here we will present our solution for one O and one B-type massive well-detached SB2 system. The masses of their components are about 20 Msun and 14 Msun, respectively.