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

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

A SkyMapper view of Carbon Stars in the Large Magellanic Cloud: A lower mass LMC?

Wan Zhen, Sydney Institute for Astronomy, School of Physics A28, The University of Sydney, NSW, 2006, Australi

We isolated a clean sample of carbon stars from SkyMapper DR1 and obtained their proper motion from Gaia DR2. The dynamic centre of the carbon stars are found to be (R.A.,Dec.)=(81°.18±0.23,-68°.65±0.11), which is ∼1° away from either HI centre and photometric centre. The same model is fitted to RGB stars and young MS stars. We found that the RGB stars roughly have same dynamic centre as the carbon stars, whereas the young MS stars' dynamic centre is close to the photometric centre. With the best-fitting model, we estimate the mass of LMC within 7 kpc to be $(2.2\pm0.1)\times10^{10}$ Msolar and within 30 kpc to be $(9.5\pm0.27)\times10^{10}$ Msolar. This mass is at the lower end of the mass required in the first infall scenario, and might imply a different evolution history of LMC.