A New Survey of Red Supergiants in the Magellanic Clouds

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Abstract

Here we present the first results from a pilot program aimed at studying the red supergiant population of the Magellanic Clouds. We selected candidates using only near infrared photometry, and with the AAOmega spectrograph at the Anglo-Australian Telescope, obtained medium resolution multi-object spectroscopy in the optical and around the calcium triplet for them. With it, we perform spectral classification and derive line-of-sight velocities, confirming their stellar nature and membership to the clouds.

Around two hundred new RSGs have been detected (nearly doubling the number of known RSGs in the clouds), hinting at a yet to be observed large population. This new dataset allows for more representative generalization of the behaviour of these stars, particularly at the lower end of their mass distribution. With near and mid infrared photometry we study their brightness distribution and variability, the onset of mass-loss and the appearance of dust in their atmospheres, and their effect on the assumed magnitudes of SN progenitors. Also, new a priori classification criteria are investigated, combining mid and near infrared photometry to improve the observational efficiency of similar programs as this.