

Workshop

Stellar End Products: The Low Mass - High Mass Connection

ESO Garching, 6-10 July, 2015

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Title:

Winds and Circumstellar Morphology of Binary AGB Stars with ALMA

Abstract:

Binary AGB stars are the likely progenitor systems for planetary nebulae and Type Ia supernovae. Both phenomena are fundamentally important for our understanding of stellar evolution and the evolution of the Universe, but the formation of both is poorly understood. To better constrain the necessary conditions for their creation, i.e. the accretion efficiency onto the companion and the effects on the wind properties of the AGB star, we set out to observe the circumstellar envelopes of a small sample of well-studied binary AGB stars with ALMA. The sources: R Aqr, Mira, W Aql, and π 1 Gru; cover a decisive range in binary separation and wind properties. The three larger-separation sources (ranging from about 40 to several 100 AU in separation) have been observed and show fascinating new results enabling us to better understand e.g. the effects of wind-wind interaction and orbit eccentricity. The observational results will be presented and compared to initial attempts at modelling the wind shaping and put into a larger context. I will also discuss lessons learnt and things to keep in mind for future investigations.