



IAUS-REG-NUMBER: IAUS-101

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CONTRIBUTION: Talk

TITLE: Characterising planetary nebulae in the Large Magellanic Clouds

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ABSTRACT:

Planetary nebulae (PNe) represent the final link in the chain of the gas and dust enrichment of low- and intermediate-mass stars. We present a comprehensive inspection of all the observational data, ranging from the UV to the IR wavelengths, available for 10 PNe of the Large Magellanic Cloud (LMC). By analyzing them using theoretical modelling (synthetic spectra and evolutionary tracks) we determine the mass at the beginning of the asymptotic giant branch (AGB) phase, the luminosity and effective temperature of the central star, as well as the properties (gas and dust) of the nebula. In particular, we find 7 stars that reached the carbon star stage and produced carbon dust and 3 that have not experienced sufficient third dredge-up episodes, showing traces of silicate dust. The determination of the nature of these objects allows us to create a bridge to connect the PNe phase with the previous ones, such as the AGB stage. Indeed, our aim is to retrieve the entire evolutionary sequence of the central star and the associated dust production of each target of the sample, with particular attention to the mass loss rate necessary to find consistency with all these phases.