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TITLE: HUNTRESS – HUnting plaNeTaRy nEbula and Symbiotic Stars: first results
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ABSTRACT:
Planetary nebulae (PNe) and Symbiotic Stars (SySt) represent the fate of the majority of the stars, and they are among the brightest Hα emitters. While PNe provide vital clues for galaxy chemical evolution, SySt largely contribute to the understanding of the late-stage interacting binary evolution. The numbers of known PNe and SySt in the Milky Way show a discrepancy of up to two orders of magnitude if contrasted with the predictions from population synthesis. This work aims to contribute to the number count of PNe and SySt in the Galaxy. In addition to the optical criteria for Hα emitters of the VPHAS+ DR3, machine-learning techniques (classification tree, linear discriminant analysis and K-nearest neighbors) were applied to the IR magnitudes from the AllWISE catalog, as defined by Akras et al. (2019a,b). The mandatory spectroscopic follow-up of the selected candidates was performed with the 4.1-m SOAR telescope, and the symbiotic nature of 71% candidates was confirmed (Akras et al. 2021). More recently, the optical SOAR longslit spectroscopy of another 13 candidates was undertaken. The preliminary results (Liberato et al., 2023; Gonçalves et al., in prep) reinforce that the optical plus IR selection criteria return strong emission-line objects, most of them are either PNe or SySt. This contribution will discuss in detail the optical-IR selection criteria as well as the results so far obtained by the undergoing project HUNTRESS – HUnting plaNeTaRy nEbula and Symbiotic Stars.