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TITLE: The role of binary interactions on the formation, shaping and population characteristics of planetary nebulae: a critical appraisal and a way forward
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ABSTRACT:
Observationally we know that about 20% of all central stars have close, post-common envelope (CE) binaries in the middle. We know that other central stars have wider companions, creating an IR excess or even an Xray excess. We have some theoretical idea of what shaping options the CE and similar binary interactions offers. Pre-PN have well measured likely binary-induced characteristics, but with generally no known binaries in the middle and there are a host of other "facts" that tantalisingly point to a consistent story for the formation and evolution of the PN population as a whole. We also know from population studies, what the impact of binary interactions on the entire population looks like. However, all these knowledge streams have not been put together to answer the question of whether the approximately 80% of all PN with no confirmed binary owe their shape/luminosity and existence to a companion. In this talk I will collate these facts with the aim to rally a part of our community to create a self consistent model (likely from more than one technique, in unison) that fits all observational knowledge and is predictive as to the fraction of all PN that is actually impacted by a companion.