institut für astrophysik
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Seminar

by

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Mass-loss from evolved stars: recent advances and future prospects from surveys to statisticsers

Outflows of evolved stars drive the chemical evolution of galaxies in the ocal Universe. Population models dictate that low- to intermediate-mass asymptotic giant branch (AGB) stars dominate this process today, while in the early universe, massive stars and supernovae were likely the main contributors. However, many key issues regarding AGB mass loss remain unresolved. Thanks to Spitzer, a number of Local Group galaxies have been observed in detail, revealing the dust-production rates of all evolved stars, and hence the total dust injection rate for the galaxies. However, measuring the gas mass-loss rates outside our galaxy is prohibitive, making it unlikely that a large sample will be available in the foreseeable future, and systematic studies in the Milky Way remain conspicuously absent. The Nearby Evolved Stars Survey (NESS) aims to fill this gap, by targeting a volume-limited sample of roughly 400 sources within 2 kpc, enabling robust statistical studies of local evolved stars. We will derive the dust and gas return rates in the Solar Neighbourhood, and constrain the physics underlying these processes. I will present a etailed description of the project, including the motivation and strategy, and ghlight some of our early results. I will also briefly introduce the tools we are developing that will, along with a catalogue containing all raw and reduced NESS data and a compilation of literature data, be released to the community to aid reproducibility