Contribution ID: **18** Type: **Talk**

Advances in stellar and galactic evolution with the population of the progenitors of planetary nebulae from the APOGEE DR17 survey

Friday 14 June 2024 11:30 (20 minutes)

Planetary nebulae (PNe) are the ejected gas and dust shells of Asymptotic Giant Branch (AGB) stars. We present an abundance comparison between PNe and their progenitors to disclose their similarities and differences since such a comparison has been rarely, and not recently, done in the Milky Way. While we expected similarities in most of the alpha-element distributions across the two populations, given their limited evolution in LIMS, differences in Fe and S abundances allow us to determine their depletion due to grain condensation in the post-AGB phases. Differences in N and C between PNe and their progenitors set new limits to the LIMS contributions to these elements. Radial metallicity gradients from RGs and PNe and Gaia-calibrated distances constrain galactic evolution evolution in the framework of the current chemical evolutionary models.

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Session Classification: AGB and beyond: learning from the advanced phases