An atlas of integrated Hα fluxes of planetary nebulae in the Magellanic Clouds: Combining S-PLUS Photometry and Spectroscopic Analysis

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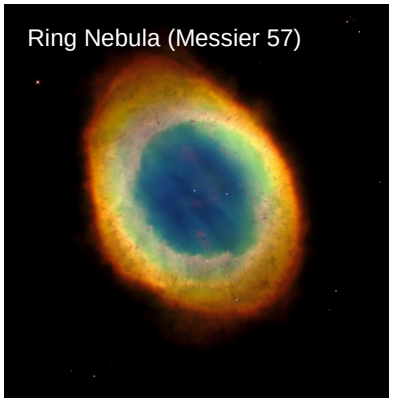
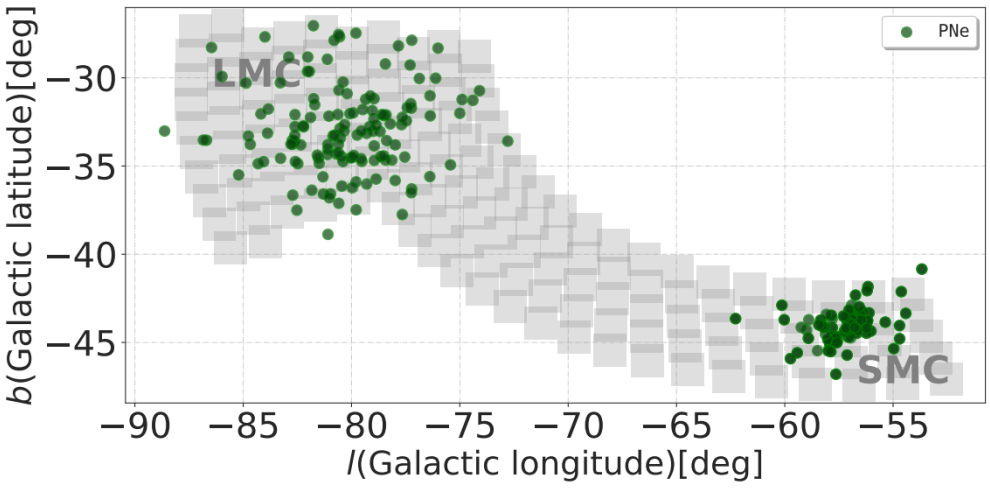
Context



What are planetary nebulae?

Planetary nebulae (PNe) are emission line nebulae that represent a short phase in the late evolution of low- and intermediate-mass stars.

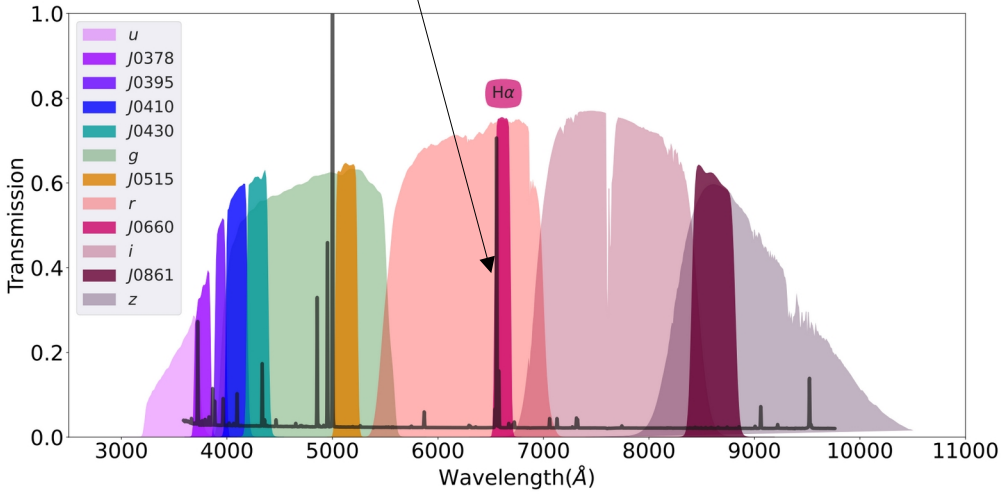
PNe in the Magellanic Clouds



The distribution of the planetary nebulae from the literature (green circles) in the Magellanic Clouds.

About S-PLUS:

Typical spectrum of a PN: the Hα and [N II] emission lines are detected by J0660 filter for sources with a redshift up to 0.015

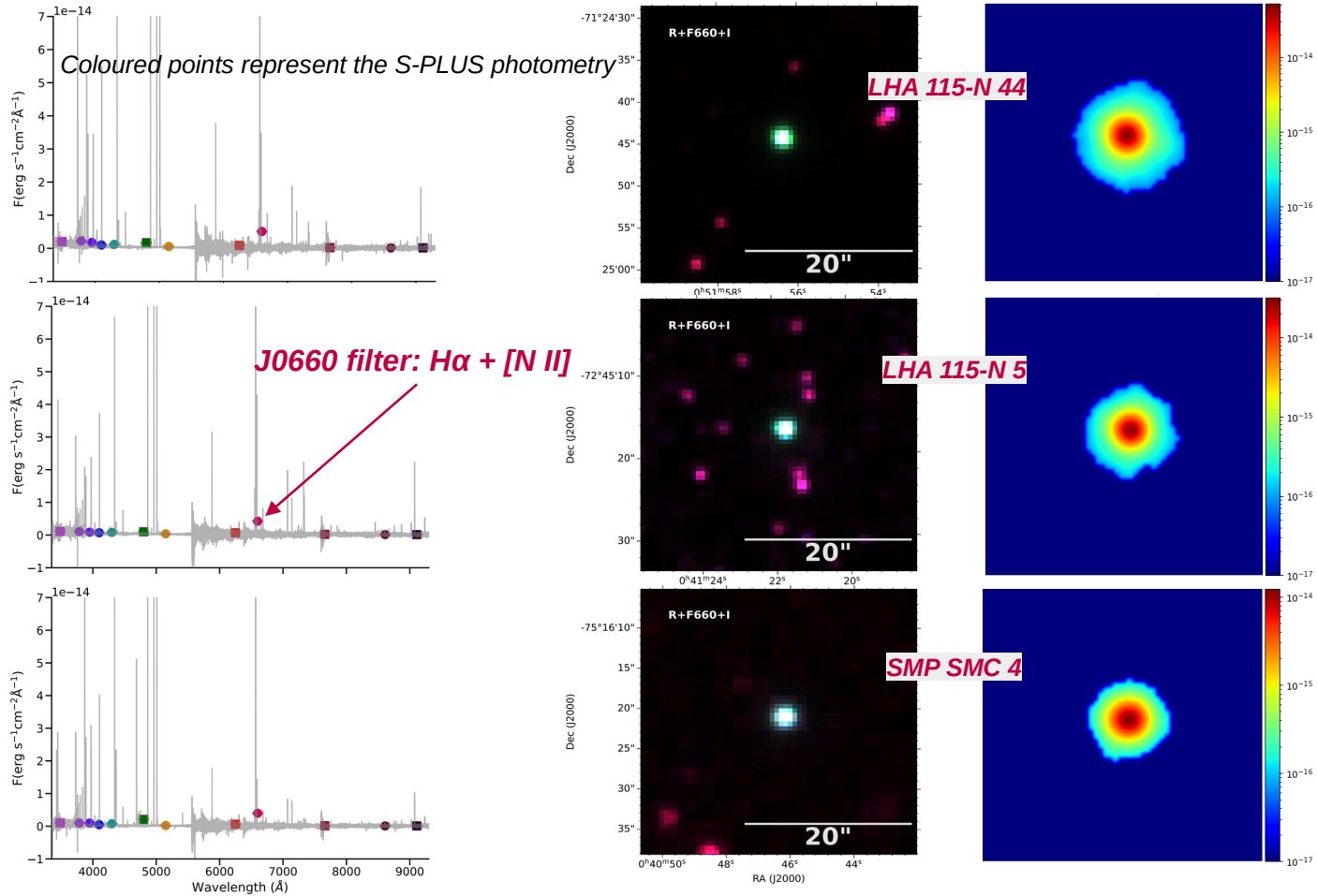


*As part of its effort to map 9,000 square degrees of the Southern Hemisphere, the S-PLUS project (Mendes de Oliveira et al. 2019) has a crucial feature: images of the entire field captured using the Hα narrow-band **J0660** filter.*

Hα flux PNe with S-PLUS data

Extracting Hα flux from photometric data

VLT/X-shooter spectra and S-PLUS photometry | **RGB image** | **Hα flux map**



Using S-PLUS data, we analyze Hα flux in planetary nebulae. This helps us understand their emission properties, ionization processes, and chemical composition, shedding light on these astronomical objects.