



*Astrophysics  
with  
Large Astronomical Surveys  
(ALAS)*



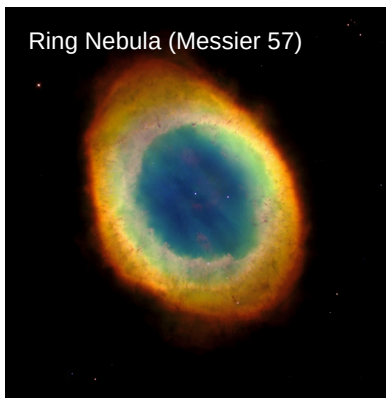
***An atlas of integrated  $H\alpha$  fluxes of  
planetary nebulae in the Magellanic Clouds:  
Combining S-PLUS Photometry and  
Spectroscopic Analysis***

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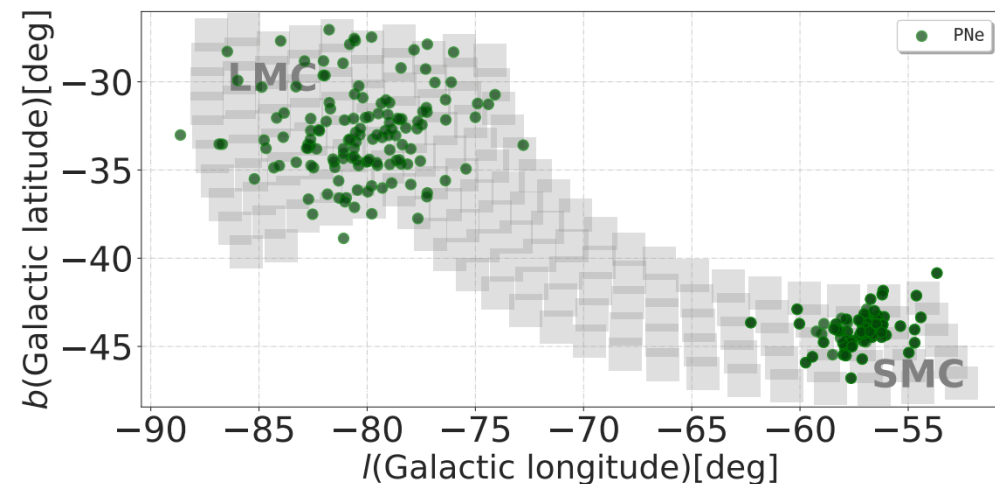
# Context



## 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.

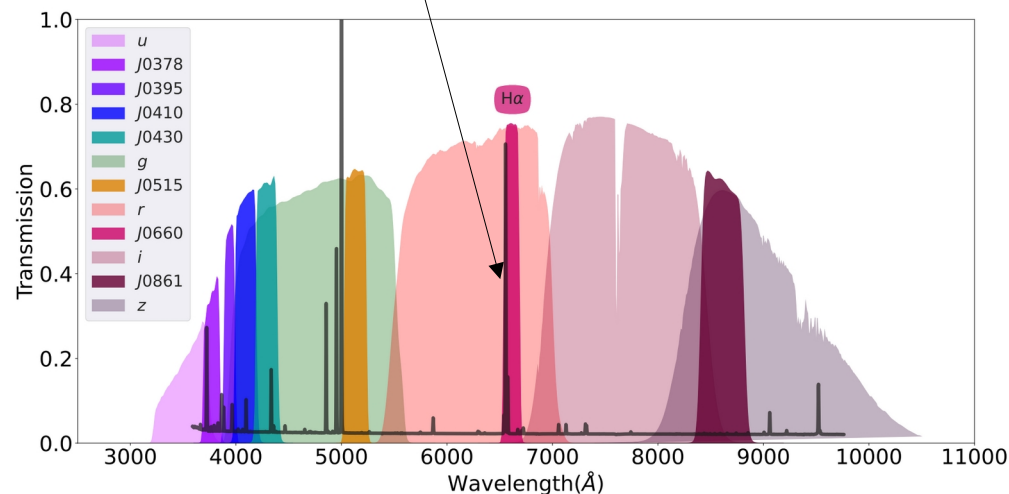
## PNe in the Magellanic Clouds



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

## About S-PLUS:

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

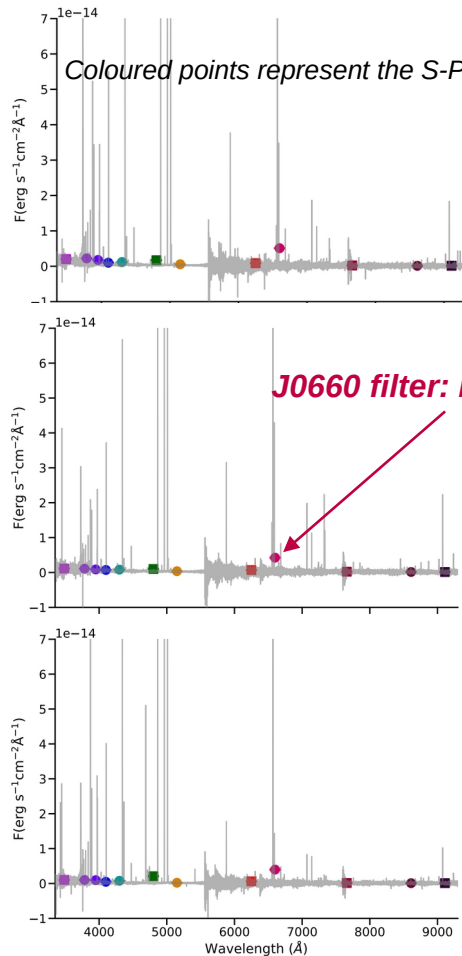


As part of its effort to map 9,000 square degrees of the Southern Hemisphere, the S-PLUS project (Mendes de Oliveira et al. 2019) has a crucial feature: images of the entire field captured using the  $H\alpha$  narrow-band **J0660** filter.

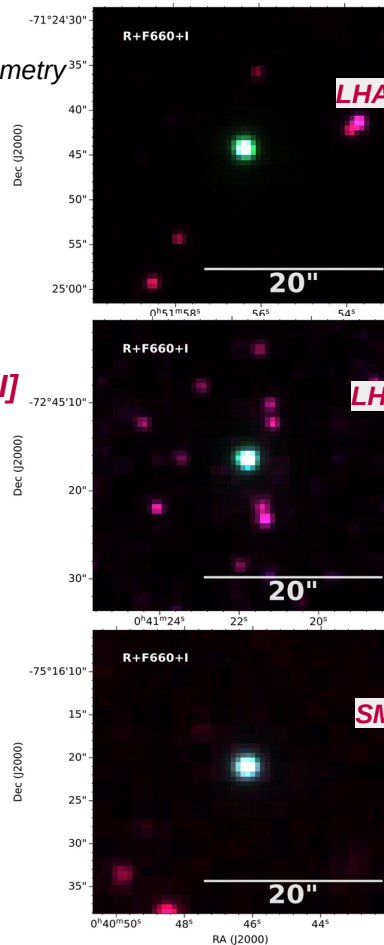
# H $\alpha$ flux PNe with S-PLUS data

Extracting H $\alpha$  flux from photometric data

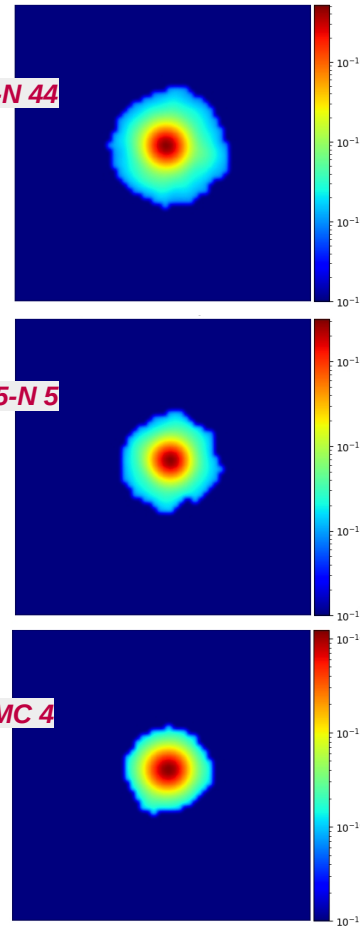
VLT/X-shooter spectra and S-PLUS photometry



RGB image



H $\alpha$  flux map



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