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Deep Spectroscopy of Planetary Nebulae in the Milky Way and M31 Using Large Telescopes

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Planetary nebulae (PNe) are probes of late-stage stellar evolution, and also key tracers of the stellar population, chemistry and kinematics of host galaxies; they are the only emission-line ISM that exist in almost every part of a galaxy, from bulge and disk to the outer halo. I will report new results from our deep spectroscopy of PNe in the Milky Way and Andromeda (M31) using the 10.4m GTC and 8.2m VLT, and briefly review on the observations of PNe with other large telescopes. In addition, I will introduce a new-generation Python-based emission-line identification code PyEMILI, which we developed for deep, high-dispersion spectroscopy in the era of data-intensive astronomy today.

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