

## The origin of the most luminous planetary nebulae: M31.

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### Abstract

The Planetary Nebulae Luminosity Function (PNLF) is an important standard candle on the extragalactic distance ladder. Its use is based on the empirical evidence that the [OIII]5007Å luminosity of PNe reaches a maximum value,  $M^*$ , invariant with galaxy type and with a small dependence on metallicity.

The PNLF method, applied to more than 50 galaxies with satisfactory results, is well established, but it lacks of a theoretical interpretation. Despite the relevance of the topic, thorough spectroscopic studies of PNe at the tip of the PNLF are still missing.

As part of our systematic effort to characterize the properties of the brightest PNe and their progenitors, we obtained deep optical spectra of a sample of PNe in two galaxies with different metallicities: 8 PNe in M31 ( $Z/Z_{\odot} \sim 1$ ) using OSIRIS at the 10mGTC and 4 PNe in LMC ( $Z/Z_{\odot} \sim 0.5$ ) with FORS2, at the VLT. The results of our analysis will be presented in Galera-Rosillo et al. I and II (in prep.). (See poster).