

First Results From the Local Group Census: Planetary Nebulae in Sextans B

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The Local Group Census is a narrowband survey of all the galaxies of the Local Group (LG) with $\text{Dec} \geq -30^\circ$, being carried out as part of the Isaac Newton Group's Wide Field Survey programme. Observations are being obtained with the Wide Field Camera at the 2.5m Isaac Newton telescope, equipped with a mosaic of four $2k \times 4k$ EEV CCDs covering a field of view of $34' \times 34'$.

The survey aims to find, catalogue and study old and young emission-line populations (e.g. HII regions, PNe, SN remnants, LBVs, WR stars, symbiotic binaries, etc.) to unprecedented levels. The value of narrowband [O III], $\text{H}\alpha$, [S II], and He II images is enhanced with complementary broad band data. This enable the linkages between stellar populations (e.g. AGB \rightarrow PNe) in the range of LG galaxies to be probed.

As an initial, relevant result of the survey, we present the detection of five candidate PNe in Sextans B (Magrini et al. 2002). Sextans B is one of the smallest dwarf irregulars known, at $M_V = -14.3$; it is a likely member of the LG, though situated at its very limits.

The candidate PNe in Sextans B were identified in our [O III] and $\text{H}\alpha$ continuum-subtracted images by their point-like and relatively strong [O III] fluxes. This is the first detection of PNe in this galaxy, and it is a notable result considering the very limited number of PNe known in other dwarf galaxies. We note that the PNe in Sextans B imply that there must have been a significant period of star formation 1-5 Gyrs ago. We contrast this with the case of the similarly luminous dIrr galaxy WLM, for which no PNe have yet been discovered.

References

Magrini, L. et al. 2002, A&A, 386, 869