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# A SEARCH FOR STAR CLUSTERS IN DWARF GALAXIES OF THE LOCAL GROUP: DWARF IRREGULARS SEXTANS A AND SEXTANS B

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A search for star clusters has been carried out on new CCD images of Sextans A and Sextans B obtained at the Du Pont 100-inch Telescope at Las Campanas Observatory. One likely globular cluster has been identified in each galaxy, on the basis of their color, luminosity and morphology, along with $\simeq$ 30 other possible compact non-stellar (and with the appropriate colors) candidates per galaxy.

The candidates were selected on the basis of their non-stellar nature, as revealed by the values of their DAOPHOT II SHARP($\geq$ 0.3) and FWHM ($\geq$ seeing) indices and by a visual inspection, all indicating extended nature objects. Also a color and magnitude restriction (V-I $\leq$ 1.4 and I $\leq$ 21.5) was imposed on the candidates as a selection requirement.

After a visual inspection, color and magnitude cutoffs, we have kept 27 objects in Sextans A and 37 in Sextans B as candidates . These are actually very large figures for dIrr galaxies, when we compare them with other members of similar type in the Local Group, whose mean specific frequency (as defined by Harris 1991) is $\simeq$2.3. If Sextans A and Sextans B had a specific frequency similar to the latter, we would expect a maximum of 2 or 3 true globular clusters in each of these two galaxies. This fact, together with the substantial population of background galaxies in the examined fields, makes it unlikely that many of these objects, other than the ones discussed below, are true clusters in these galaxies. Many of our candidates may actually correspond to blue compact and E/S0 galaxies, although some concentration of them around the center of Sextans B may indicate the presence of objects associated to this galaxy in the sample. This effect, though, was not present on the sample of Sextans A candidates.

One conspicuous candidate in Sextans A and another in Sextans B (see Fig. 1) appear with high probability of being globular clusters due to their morphology, location within their host galaxy, color and total integrated absolute magnitude. These were

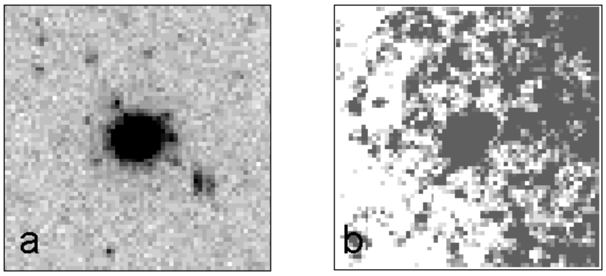

Fig. 1. Candidates (a) #13 in Sext A and (b) #21 in Sext B. Note the resolved stars in #13

analyzed in more detail through surface brightness profiles and a color-magnitude diagram of their resolved member stars (only Sextans A #13). After examining all the facts, we concluded that candidates #13 and #21 are likely globular clusters, the strongest argument being that neither of them follows the de Vaucouleurs $r^{1/4}$ law for elliptical galaxies.

The presence of at least one globular cluster in Sextans A and one in Sextans B implies specific frecuencies of 1.4 and 2.1, respectively, which are compatible with values of this parameter for galaxies of similar morphology and total absolute integrated magnitudes. Finally, HST images of the central part of Sextans A were also visually inspected in search for cluster candidates selected on the basis of their morphology and angular size. This resulted in 6 additional clusters candidates.

Only a spectroscopic follow-up should reveal the true nature of all the cluster candidates in our sample. This work is presented in detail in Pedreros & Gallart (2002).

## REFERENCES

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