

## Compact Stellar Systems – Finding the Needles in a Haystack

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Compact Stellar Systems are amongst the oldest and densest stellar systems known. Whereas the solar neighbourhood has fewer than 1 star per cubic parsec these systems can contain millions of stars in the same volume.

Our studies have revealed that these objects, which visually look almost identical, are actually composed of two populations; 1) the extremely high mass end of the globular cluster population, far more massive than any GCs in the local group, 2) a population of former galactic nuclei left behind when their host galaxies were destroyed by a tidal interaction with a larger galaxy.

At present it is difficult to know how many of each type exist. Partly because these objects are hard to find, because they are so compact they look like stars when seen from the ground. But a new survey, the 4MOST Hemisphere Survey (4HS), will be obtaining spectra of millions of objects in the nearby Universe. This project will examine the problem of how to find these objects from imaging data, so that 4HS will be able to obtain spectra and confirm their nature.

For more information on this project please contact Dr. Norris ([MNorris2@uclan.ac.uk](mailto:MNorris2@uclan.ac.uk)).



Figure: Two Compact Stellar Systems. M59-UCD3 has a central black hole more massive than that at the centre of the Milky Way, yet is itself hundreds of times less massive than our galaxy. Credit: A. Romanowsky (SJSU), Subaru, Hubble Legacy Archive