

G2C2: Galactic Globular Cluster Catalog



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Do We Really Need another Globular Cluster Catalog?

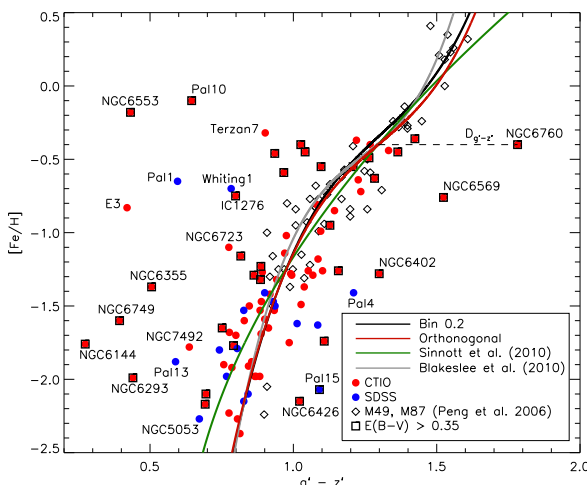
Studies of the Galactic globular cluster (GC) system have provided key insights to such diverse topics as stellar populations, assembly history of galaxies, and the age of the Universe. Yet despite their importance, integrated photometric properties of Galactic globular clusters were derived from extremely inhomogeneous data culled from a variety of sources and detectors dating back nearly 70 years.

In Vanderbeke et al. (2014a) we have presented g- and z-band aperture photometry for 96 Galactic GCs, making this the largest homogeneous catalogue of SDSS photometry for these objects. For a subset of 56 clusters, we also provide r- and i-band photometry. Additionally, we added spectroscopic observations.

Here we present the first results based on our data set.

I. Colour-metallicity relation

In Vanderbeke et al. (2014b) we use the SDSS photometry to derive integrated colour-metallicity relations for Galactic GCs.

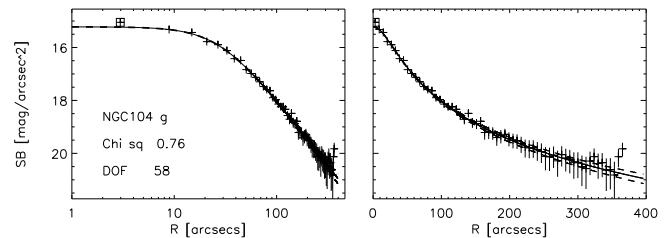


We find:

- non-linearity in $[Fe/H]$ and calcium triplet CMRs
- CMR scatter can be reduced when combining two reddening laws from the literature
- low-reddening outliers, related to accreted dwarf galaxies
→ Do GCs in dwarfs undergo different enrichment history?

II. Structural parameters

These parameters bear an imprint of the initial GC formation conditions and allow to study interactions with the galactic environment. Moreover, high stellar concentrations are linked to binaries, and, therefore affect the formation of blue stragglers and hot horizontal branch (HB) stars.

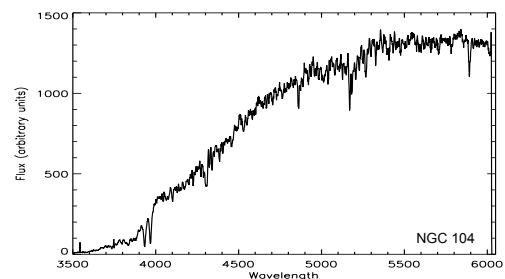


Results:

- We recover the relation between the half-light radius and the Galactocentric distance.
- We find a correlation between the concentration and the Galactic latitude (confirming theoretical models).
- We do not find correlations between the structural cluster properties and their exotic stellar populations (including pulsars and X-ray sources) in our data.

III. Integrated spectroscopy

Our team also obtained VLT/FORS2 integrated drift-scan spectroscopy (90 hours of observing time) for the bulk of the Galactic GCs.



We will determine the age bias (due to hot HB stars) by comparing age estimates based on CMDs and integrated spectroscopy. We will calibrate this effect with ultraviolet-optical colours.

Another objective is to determine the chemical abundances of the stellar populations, which will be useful for stellar population synthesis models.

G2C2 papers:

Vanderbeke et al. 2014a, MNRAS, 437, 1725

Vanderbeke et al. 2014b, MNRAS, 437, 1734