



Introduction

Dwarf galaxies are essential to our understanding of galaxy evolution as their shallow gravitational potential wells preserve dynamical signatures of early formation.

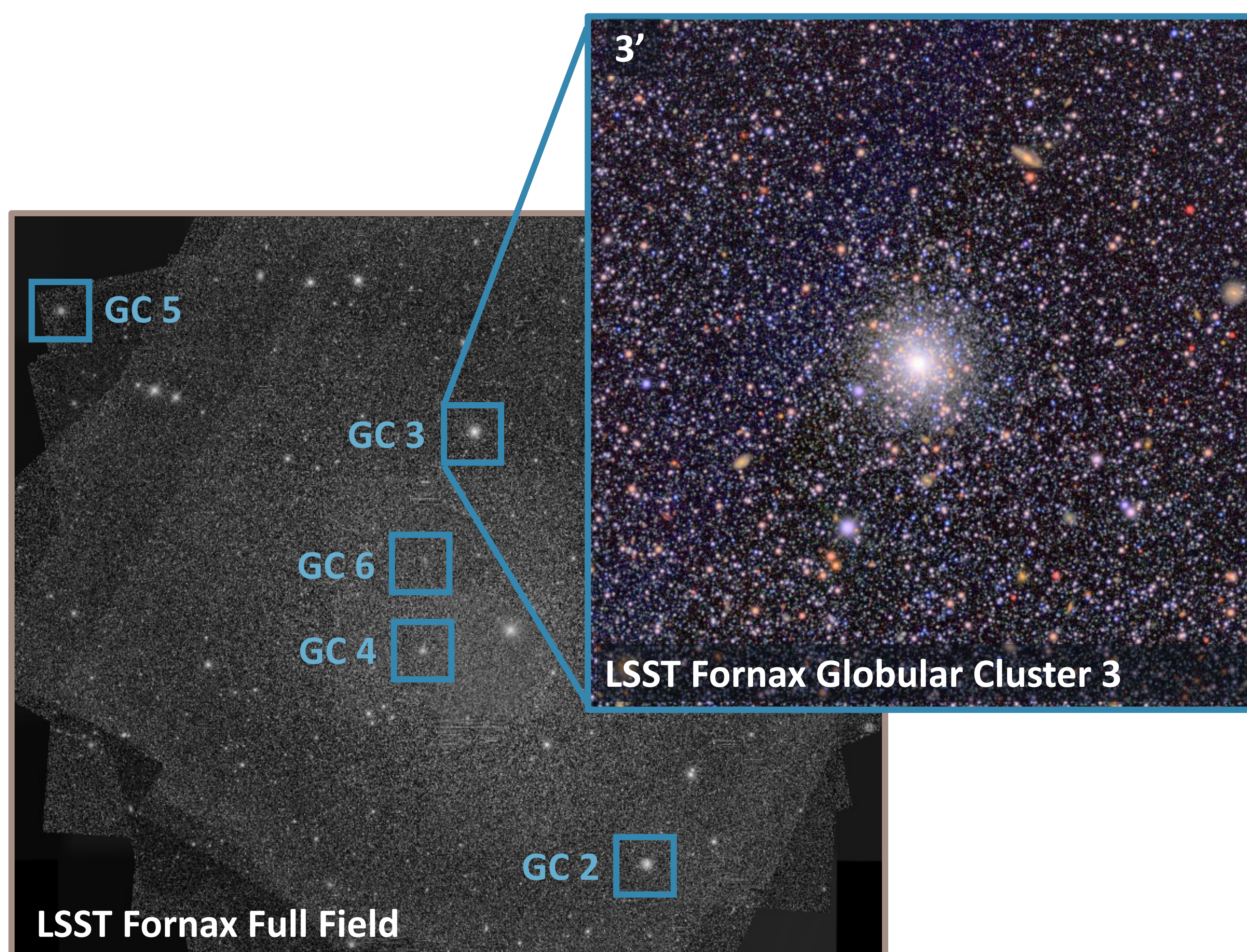
The Fornax dwarf spheroidal galaxy is especially valuable due to its proximity within the Local Group ($d = 137$ kpc) and its unusually rich population of six globular clusters (GCs)¹.

Fornax dynamical puzzle:

- Dynamical friction models predict that the Fornax GCs should have sunk into the galaxy centre
- Yet they remain at large radii and show little evidence of interaction¹

Project Aim:

Using observations from the Legacy Survey of Space and Time (LSST) Data Preview 1 (DP1), we search for faint outer structures around the Fornax GCs that may indicate ongoing interaction with the galaxy's gravitational potential.



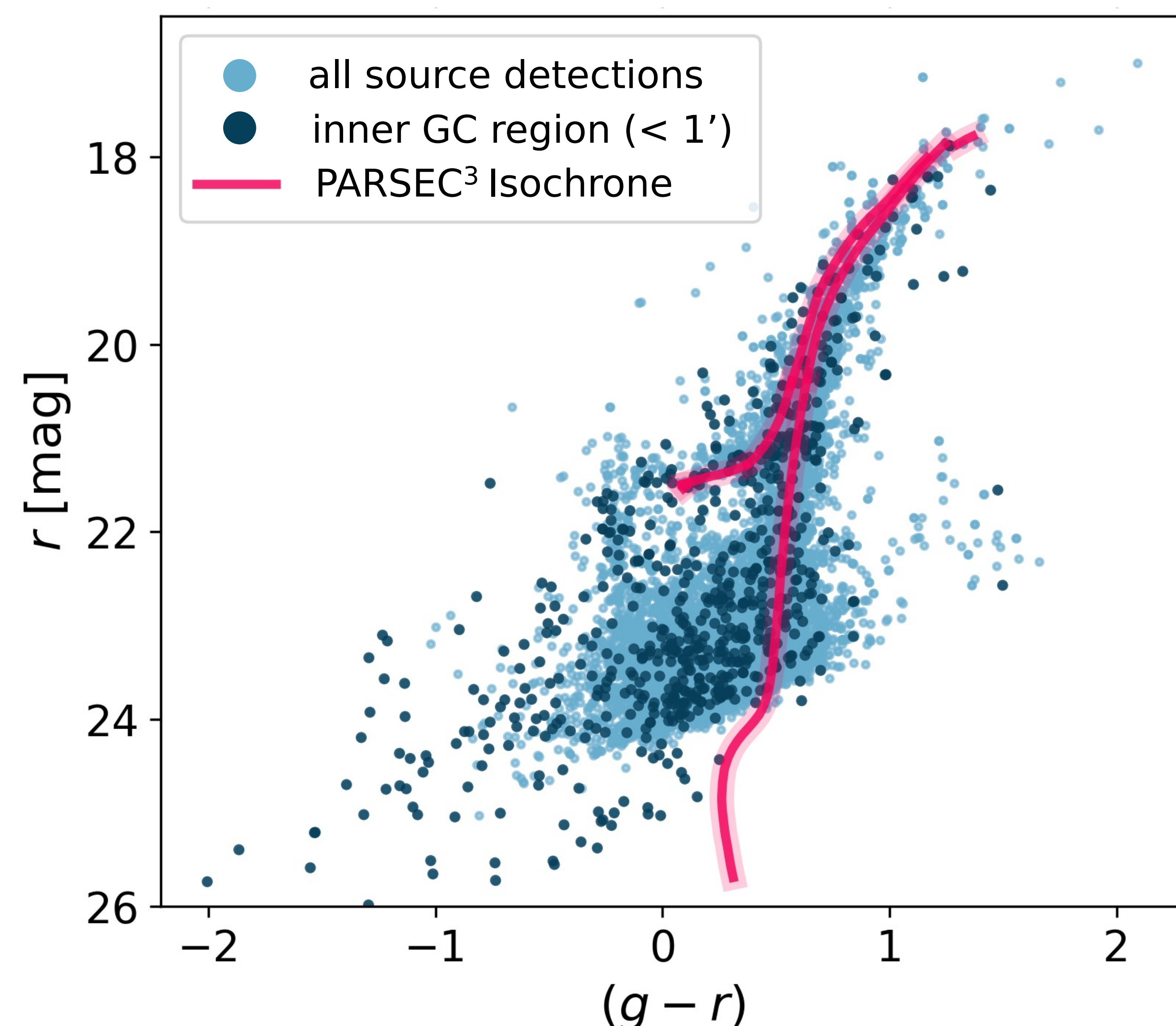
LSST Source Catalogue Creation

LSST DP1 object catalogues show incomplete source recovery in dense regions of the Fornax field, motivating a custom photometric catalogue.

Workflow:

- Constructed GC centred 5' mosaics in the LSST g , r , and i bands.
- Detected sources at a 3σ threshold above the local background.
- Applied LSST SourceDeblendTask to separate overlapping sources in crowded regions.
- Measured centroids, shapes, PSF fluxes, and Gaussian fluxes.
- Applied morphology diagnostics and Gaia foreground rejection² to produce a cleaned Fornax GC 3 stellar catalogue.

Fornax GC 3 CMD



Discussion

Sources near the centre of Fornax GC 3 occupy the same CMD regions as the surrounding Fornax field.

This indicates GC 3 cannot be cleanly separated from the Fornax field population using colour-magnitude information alone.

Stellar density maps and radial profiles recover the GC 3 overdensity, but no conclusive tidal features can be identified.

Next steps: construct field-subtracted surface brightness profiles.

