

## **Abstract**

Globular clusters (GCs) were long believed to be simple, non-rotating, isotropic and spherical stellar systems with all of their stars formed approximately 13 Gyr ago.

However, growing evidence is now showing a larger degree of complexity in their structure, stellar populations and internal dynamics, deeply challenging our understanding of their origin in the early epochs of galaxy formation.

I will show how the detailed study of their current internal kinematics can provide the ideal “fossil record” to unveil their formation and their subsequent dynamical evolution. In particular, exploiting the synergy between state-of-the-art kinematic observations and dynamical modelling, I will describe the kinematic effects imprinted by the non-trivial interaction with a tidal field, the effects of energy equipartition and the implications for the mass-to-light ratios of GCs. This will be the starting point for exploiting at full power the comprehensive amount of data that will be delivered by the Gaia mission and in the approaching era of Extremely Large Telescopes.