The delicate motif of globular clusters in massive ellipticals: methodology and first results

A considerable body of work has been accumulated in the past two decades about the properties of globular clusters in elliptical galaxies, using both HST and ground-based telescopes. While the differences of the radial profiles of red and blue GCs are well known, a detailed characterization of the spatial features of the GCs systems has never been tried. In this talk, I will present the significant anisotropies in the projected two dimensional spatial distributions of Globular Clusters (GCs) in the elliptical galaxies NGC4261 and NGC4649 observed using an original method based on the K-Nearest Neighbor density estimator of Dressler (1980), complemented by Monte-Carlo simulations to establish the statistical significance of the results. I will discuss the apparent arc-like structure in NGC4261, where a hint of segregation for color and luminosity classes is also visible, and speculate about the possible origin and the implication for the evolution history of NGC4649. Then, I will describe the more complex over density structures observed in the GCs distribution of NGC4649, and will compare them to the similar anisotropies observed in the spatial distribution of the low-mass X-ray binaries (LMXBs) population of the same galaxies. Finally, I will elaborate on how a detailed characterization of the spatial distribution of GC achieved can provide a new benchmark for future simulations of galaxy merging evolution.