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The early and late evolution of our Galaxy through the lens of globular clusters.

mercredi 23 mars 2022 16:15 (10 minutes)

Our Galaxy, the Milky Way, is a collection of hundreds of billions stars, gas and dust bound together by gravity. Reconstructing how all the stellar components of the Galaxy formed and assembled over time, by studying the properties of the stars which make it, is the aim of Galactic archeology. In these last years, thanks to the launch of the ESA Gaia astrometric mission, in 2013, and the delivery of its catalogues, we are, for the first time, in the position to bring to light the timeline of events that helped make the Milky Way the galaxy that we observe today. Having survived billions of years to all these events and changes, globular clusters observed today in the Galaxy bear witness of this entire past. They did not necessarily all formed in the Galaxy itself: a fraction of them can indeed have been formed in satellite galaxies accreted by the Milky Way over times. In the recent years, there have been several attempts to constrain the nature of clusters (accreted or formed in the Milky Way itself) and to reconstruct from this the properties of the accretions events experienced by the Milky Way through time. However, in all spaces analyzed so far (mainly kinematic and chemical-abundance spaces), some significant overlap between accreted and in-situ populations can be expected, leading to possibly an incorrect reconstruction of the accretion history of our Galaxy. With my PhD project, we want to make a step forward in the reconstruction of the phases of Galactic mass assembly by coupling the positions in the Galaxy, kinematics and chemical abundance properties of Galactic globular clusters to their internal parameters. We will do this by analyzing a set of dissipation-less high-resolution N-body simulations, and by running new simulations where we will couple the dynamical evolution of the globular clusters in Milky-Way type galaxies to their internal evolution. We will use this set of simulations to interpret current data and also to provide model-based predictions that will be fundamental for future surveys.

Field

Not in the above

Day constaints

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