Hubble Space Telescope

Cycle 15 AR Proposal

Dynamical evolution of galaxy bulges: harassment, tidal streams and interactions with globular clusters

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Abstract

Galaxy bulges represent fundamental components of today's galaxies. Spirals living in clusters and groups are harassed by their neighbors on a typical timescale of one Gigayear: some may lose their gas to become lenticulars while others may lose their entire disk component with the leftover bulges evolving into dwarf elliptical galaxies. Our previous HST WFPC2, NICMOS and ACS surveys of spiral bulges have highlighted that bulges cannot be represented as members of a single family but rather exhibit a broad range of features in their stellar populations and dynamical profiles. Here we aim at understanding the origin and the consequences of this diversity by studying the dynamical evolution of bulges in their complex envinronment by means of high resolution N-body simulations with live galactic components (stellar populations and dark matter particles). We will investigate not only how the properties of the bulges evolve due to tidal interaction with neighboring galaxies but also what is the fate of the tidally stripped stellar population and globular clusters during these interactions.

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