

How nucleation and luminosity shape faint dwarf galaxies

Sánchez-Janssen, R., Puzia, T. H., Ferrarese, L., Côté, P., Eigenthaler, P., Miller, B., ... & Taylor, M. A. (2019). How nucleation and luminosity shape faint dwarf galaxies. *Monthly Notices of the Royal Astronomical Society: Letters*, 486(1), L1-L5. <10.1093/mnras/slz008> Accessed 22 Feb 2021.

Abstract

We study the intrinsic shapes of a sample of over 400 quiescent galaxies in the cores of the Virgo and Fornax clusters with luminosities $106 \leq L_g/L_\odot \leq 108$. Similar to satellites of the Local Group and Centaurus A, these faint, low surface brightness cluster galaxies are best described as a family of thick ($\langle C/A \rangle > 0.5$), oblate-triaxial spheroids. However, the large sample size allows us to show that the flattening of their stellar distribution depends both on luminosity and on the presence of a nuclear star cluster. Nucleated satellites are thicker at all luminosities compared to their non-nucleated counterparts, and fainter galaxies are systematically thicker as well, regardless of nucleation. Once nucleation is accounted for, we find no evidence that the environment the satellites live in plays a relevant role in setting their 3D structure. We interpret both the presence of stellar nuclei and the associated thicker shapes as the result of preferential early and rapid formation, effectively making these faint nucleated galaxies the first generation of cluster satellites..