

# Ultra deep sub-kpc view of nearby massive compact galaxies

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*(Submitted on 20 Feb 2012 (v1), last revised 2 Apr 2012 (this version, v2))*

Using Gemini North telescope ultra deep and high resolution (sub-kpc) K-band adaptive optics imaging of a sample of 4 nearby ( $z \sim 0.15$ ) massive ( $\sim 10^{11} M_{\odot}$ ) compact ( $R < 1.5$  kpc) galaxies, we have explored the structural properties of these rare objects with an unprecedented detail. Our surface brightness profiles expand over 12 magnitudes in range allowing us to explore the presence of any faint extended envelope on these objects down to stellar mass densities  $\sim 10^6 M_{\odot}/\text{kpc}^2$  at radial distances of  $\sim 15$  kpc. We find no evidence for any extended faint tail altering the compactness of these galaxies. Our objects are elongated, resembling visually S0 galaxies, and have a central stellar mass density well above the stellar mass densities of objects with similar stellar mass but normal size in the present universe. If these massive compact objects will eventually transform into normal size galaxies, the processes driving this size growth will have to migrate around  $2-3 \times 10^{10} M_{\odot}$  stellar mass from their inner ( $R < 1.7$  kpc) region towards their outskirts. Nearby massive compact galaxies share with high- $z$  compact massive galaxies not only their stellar mass, size and velocity dispersion but also the shape of their profiles and the mean age of their stellar populations. This makes these singular galaxies unique laboratories to explore the early stages of the formation of massive galaxies.

Comments: Accepted for publication in ApJ Letter. Version revised to match the accepted version

Subjects: **Cosmology and Extragalactic Astrophysics (astro-ph.CO)**Cite as: **arXiv:1202.4328 [astro-ph.CO]**(or **arXiv:1202.4328v2 [astro-ph.CO]** for this version)

## Submission history

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