Co-Evolution of Central Black Holes and Galaxies
Proceedings IAU Symposium No. 267, 2009
B. M. Peterson, R. S. Somerville, & T. Storchi-Bergmann, eds.
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doi:10.1017/S1743921310007015

Stellar Populations of the Most Massive Galaxies

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Keywords. galaxies: evolution, galaxies: structure – galaxies: elliptical and lenticular, cD

Within the hierarchical CDM framework, gas-poor mergers contribute substantially to the building of the most massive galaxies (Faber *et al.* 2007). We want to test this scenario by studying the fundamental plane (FP) and the stellar populations of the most massive galaxies. We investigate a well-defined sample of massive early-type galaxies at $0.1 < z < 0.4$, identified from the SDSS database. Out of 42,000 possible targets in the SDSS database, we extracted 23 luminous early-type galaxies with bona fide high velocity dispersions of $\sigma > 350\,\mathrm{km\,s^{-1}}$. These systems are located either in high or low-density environments and show a variety of small surface-brightness structure. Using archival *HST*/ACS images and Gemini/GMOS spectroscopy, we will explore the photometric and spectroscopic properties of these galaxies.

These massive galaxies define steeper size, mass, and mass density-luminosity relations than the bulk of the SDSS early-type galaxy population (Bernardi *et al.* 2008). These results are consistent with dry mergers contributing importantly to the mass budget of massive galaxies. Figure 1 shows that the FP for our massive galaxies is tilted with respect to SDSS early-type galaxies. We will perform a stellar population analysis of high S/N GMOS spectra to test whether this tilt results either from non-homology, variations in the dark matter content, or M/L ratio among the galaxies.

AF acknowledges support from grant HST-GO-10826.01 from STScI.

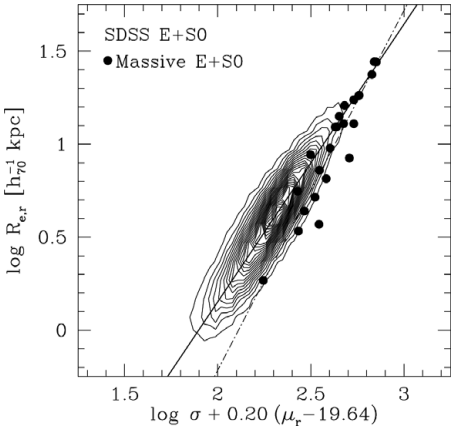

Figure 1. Edge-on view of the FP of most massive galaxies (circles) based on archival *HST*/ACS data and σ from SDSS, compared to SDSS early-type galaxies (contours). The most massive galaxies follow a tilted FP independent from the choice of structural parameters ($r^{1/4}$ or Sérsic).

References

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Faber, S., *et al.* 2007, *ApJ*, 665, 265

https://doi.org/10.1017/S1743921310007015 Published online by Cambridge University Press