Stellar Content of the Most Massive Galaxies

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Introduction

Understanding the formation and properties of massive galaxies allows us to constrain models of galaxy formation. Within the LCDM framework, massive galaxies are formed by a combination of dry mergers at z<1 plus AGN feedback. 1/3 of the present-day brightest cluster galaxies are expected to have built up half of their mass since z=0.5.

We introduce our new project which aims to study a well defined sample of massive galaxies at 0.1<z<0.4, selected from the SDSS database. Optical Gemini/GMOS spectroscopy and HST/ACS imaging was acquired for our sample. New high signal-to-noise in the galaxy spectra allows us to study in detail the kinematics and stellar populations of the galaxies.

Results

Out of 4x10^4 SDSS/DR5 early-type galaxies with 14.5<rPet<17.8 and passive spectral type we selected 23 galaxies. Using HST/ACS imaging we study the FP for these galaxies, see Fig FP. High-S/N Gemini/GMOS spectra reveals various interesting details, like weak emission lines.

Main Science Goals

• Study the massive galaxy population over a wide luminosity range at 0.1<z<0.4.
• Construct scaling relations and study dependence of galaxy properties on environment.
• Constrain evolution of the stellar populations and derive chemical enrichment history (ages, [M/H] and a/Fe).

Fundamental Plane (FP) for Massive Galaxies