

Evolution of the Fundamental Plane for early-type galaxies up to $z = 1.2$

M. Fernández Lorenzo¹, J. Cepa^{2,3}, A. Bongiovanni^{2,3}, A. M. Pérez García^{2,3}, A. Ederoclite⁴, M. A. Lara-López⁵, M. Pović¹ and M. Sánchez-Portal⁶

¹Instituto de Astrofísica de Andalucía (IAA-CSIC), email: mirian@iaa.es, ²Instituto de Astrofísica de Canarias (IAC), ³Universidad de la Laguna (ULL), ⁴Centro de Estudios de Física del Cosmos de Aragón (CEFCA), ⁵Australian Astronomical Observatory (AAO), ⁶European Space Astronomy Centre (ESAC)/ESA

Abstract. We studied the evolution of the Fundamental Plane in B- and g -bands, for two samples of early-type galaxies at $0.2 < z < 0.35$ and $0.35 < z < 1.2$. We found a difference in the intercept that can be interpreted as galaxies at $\langle z \rangle \sim 0.7$ being 0.68 and 0.52 mag brighter in the B- and g -band respectively, than their local counterparts. From the study of the Kormendy relation, we found the existence of a population of very bright ($-21.5 > M_g > -22.5$) and compact ($Re < 2$ kpc) galaxies of which only a small fraction of 0.4% exists at $z = 0$, and that would be responsible for the apparent evolution in the Kormendy relation (Fernández Lorenzo *et al.* 2011). These compact objects would have evolved mainly in size by the action of “dry” minor mergers.

We checked the effect of these bright and compact objects in the FP by comparing the galaxies with $-21.5 > M_g > -22.5$ of our high-redshift sample and the SDSS early-type galaxies of Bernardi *et al.* (2003) in Fig. 1. The previous evolution found in the FP seems to be caused mainly by these galaxies, which have virtually disappeared at $z = 0$.

Keywords. galaxies: evolution, galaxies: fundamental parameters

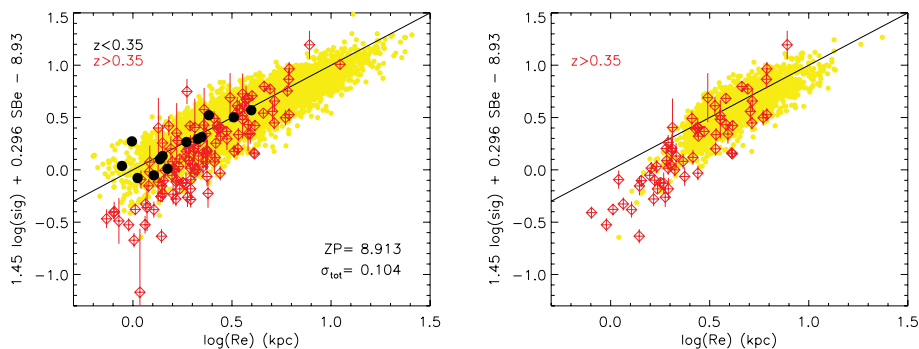


Figure 1. Edge-on projection of the FP in the g -band for all the galaxies in our local (black) and high- z (red) sample, and for the SDSS sample (yellow) (left). In the right panel we represented only galaxies with $-21.5 > M_g > -22.5$.

References

- Bernardi, M., *et al.* 2003, *AJ*, 125, 1866
Fernández Lorenzo, M., Cepa, J., Bongiovanni, A., *et al.* 2011, *A&A*, 526, 72