R19a Fundamental Plane of GALEX Early-type Galaxies with Recent Star Formation Activities

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Fundamental Plane (FP) of early-type galaxies is one of the most important keys to understanding formation and evolution of galaxies. Recent GALEX observations reveal enhanced UV fluxes from an unexpectedly large fraction of early-type galaxies in the local universe ($z < 0.2$), which have been interpreted as evidence for the presence of recent star formation. These findings allow us to explore the systematic impact of young ($t < 1$ Gyr) stellar population on the various scaling relations. Here we have examined the physical characteristics of the recent star formation activities, and investigated their influence on the FP. Contrary to the conventional view, we find that the recent star formation activities can *hardly* affect the tilt and even the thickness of the FP. We suggest that the systematic geometrical effect (i.e., the variation in the radial concentration) of new-born stars within each galaxy is the main driver behind the conservation of the slope and scatter of the FP of early-type galaxies.