[초GC-01] The star formation history of early-type galaxies

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We present a summary on the progress we made recently in the field of the star formation history of early-type galaxies. Observationally, early-type galaxies are investigated mainly through short-wavelength lights such as the rest-frame ultraviolet and U bands, where star formation and black-hole nucleus activities are traced effectively. Theoretically, detailed modeling on the galaxy merging history and star formation involved in it are scrutinized mainly through the technique of semi-analytic models. All in all, we believe that we now have a markedly clearer view to the formation and evolution of early-type galaxies compared to a decade ago. Early-type galaxies seem to have formed the bulk of their stars before z=1, but the residual star formation since then is not negligible especially in the sense of observable light strengths at short wavelengths. Mergers and central black holes play important roles, but their detailed effects are still difficult to understand mainly due to the lack of physical foundation. At least for another decade of so, calibrations between the observation on the nearby universe and numerical simulations will have to provide tools to polish the existing semi-analytic approaches for attempting to take a glimpse of the evolution history of galaxies.

[구GC-02] Tracing the recent star formation in SAURON/GALEX early-type galaxies

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We present Galaxy Evolution Explorer (GALEX) far (FUV) and near (NUV) ultraviolet imaging of 33 nearby early-type galaxies out of the 48 representative E/S0 SAURON sample with ground-based optical imaging from the MDM Observatory. From these we have performed surface photometry by measuring the surface brightness along elliptical annuli and derived the colour profiles and total magnitudes. Blue UV-optical colours are observed in surface brightness profiles of nine galaxies suggesting recent star formation. In NUV colour-magnitude relation (CMR), roughly 15 percent of early-type galaxies (NGC474, NGC3032, NGC4150, NGC4550, and NGC7457) show a sign of recent star formation suggesting the residual star formation is common in the present day. We also show that galaxies with old populations have correlations of the integrated FUV-V, NUV-V and FUV-NUV colours with the integrated Mgb, Fe5015 and H_beta linestrengths. Furthermore, we have studied the UV fundamental plane (FP) and found that the slopes in the FP for quiescent early-type galaxies and recent star formation galaxies are different and they occupy different positions in the FP.