[구GC-19] Role of star formation and resulting properties from equal mass disk merger simulations

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In the hierarchical universe, galaxy merger is predicted to be frequent, and thus it is an important element for understanding galaxy evolution. In particular, star formation is greatly enhanced during the merger. The aim of this study is to understand the position and rate change of star formation caused by equal-mass edge-on mergers. We use the GADGET2- N-body/SPH code, and fully consider gas cooling, star formation, and supernova feedback. We show the star formation rate (SFR), and the magnitude and color evolution of the merger remnants for 18 different configurations varying orbit elements and inclinations of host galaxies against orbit planes. Then we construct the mock images of the remnants and investigate on how equal-mass galaxy merger affects the SFR and color/magnitude evolution while considering dust reddening. We conclude that over 90% mass of SF in equal-mass merger is in the central region. SF in tidal feature involves a small fraction of new stars and thus is difficult to detect unless deep imaging is performed. Around 55 ± 5 percent of gas turns into stars until the final coalescence which typically corresponds to 0.8, 1.2, and 2.5 Gyr for direct, parabolic, and elliptical orbit, respectively. This result is roughly consistent with Cox et al. 2000. We plan to implement this result into semi-analytic model of galaxy formation. Caveats and future work on merging conditions are discussed.

[초GC-20] The Zoo of Early-type Dwarf Galaxies in Clusters

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Early-type dwarf galaxies are the most numerous galaxies in dense environments, making them ideal probes of the mechanisms that govern galaxy formation and evolution. Despite the common picture of an early-type dwarf galaxy as a quiescent one with no star formation and little gas, recent systematic investigations of early-type dwarf galaxies in the cluster revealed an unexpected variety among these apparently simple objects. In this talk, I review intriguing complexity of early-type dwarf galaxies in the cluster. I will also briefly introduce a new catalog of galaxies in the Virgo cluster using SDSS data, extended Virgo Cluster Catalog (EVCC).