with clusters identified in the X-ray extended source catalog. Furthermore, we identify galaxy large scale structures, and will present the correlation or anti-correlation between quiescent galaxy fraction, an indicator of star-forming activity, and the prevalence of galaxy large scale structures.

[포 GC-04] NewHorizon: On the Quenching Mechanisms of the Dwarf Galaxies

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Dwarf galaxies are the most abundant objects in the universe. Hence, understanding the dwarfs is important but relatively little is known due to the lack of computing power and limitations in the telescope resolution. We thus use the state-of-the-art NewHorizon simulation, which is a set of cosmological hydrodynamical simulations, to dissect the quenching mechanism working on dwarf galaxies by inspecting the star formation and mass history of individual galaxies. It is known that internal (AGN, SN, stellar feedback) and external (major and minor mergers, ram pressure stripping, strangulation) mechanisms affect the quenching of dwarfs. Because of the combination of these mechanisms, periodicity in the star formation history of the dwarf galaxies is expected. To check for their periodicity, Fourier transform was performed on the star formation history. By comparing the physical timescales and the periodicity, we determine the dominant effect working on the dwarfs. Then, we compare the dominant effects working on the galaxies according to their varying properties.

[포 GC-05] Pure Density Evolution of the Ultraviolet Quasar Luminosity Function at 2 < z < 6

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Quasar luminosity function (QLF) shows the active galactic nucleus (AGN) demography as a result of the combination of the growth and the evolution of black holes, galaxies, and dark matter halos along the cosmic time. The recent wide and deep surveys have improved the census of high-redshift quasars, making it possible to construct reliable ultraviolet (UV) QLFs at $2 < z < 6$ down to M1450 = -23 mag. By parameterizing these up-to-date observed UV QLFs that are the most extensive in both luminosity and survey area coverage at a given redshift, we show that the UV QLF has a universal shape, and their evolution can be approximated by a pure density evolution (PDE). In order to explain the observed QLF, we construct a model QLF employing the halo mass function, a number of empirical scaling relations, and the Eddington ratio distribution. We also include the outshining of AGN over its host galaxy, which made it possible to reproduce a moderately flat shape of the faint end of the observed QLF (slope of ~ -1.1). This model successfully explains the observed PDE behavior of UV QLF at $z > 2$, meaning that the QLF evolution at high redshift can be understood under the framework of halo mass function evolution. The importance of the outshining effect in our model also implies that there could be a hidden population of faint AGNs (M1450 > -24 mag), which are buried under their host galaxy light.

[포 GC-06] GECKO Optical Follow-up Observation of Three Binary Black Hole Merger Events

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We present optical follow-up observation results of three binary black hole merger (BBH) events, GW190408 181802, GW190412, and GW190503 185404, which were detected by the Advanced Ligo and Virgo gravitational wave (GW) detectors. Electromagnetic (EM) counterparts are generally not expected for BBH merger events, however, some theoretical models suggest that EM counterparts of BBH can possibly arise in special environments. To identify EM counterparts of the three BBH merger events, we observed high-credibility regions of the sky with telescopes of the Gravitational-wave EM Counterpart Korean