

evolves, the bar becomes longer and the light deficit becomes more pronounced. Theoretical studies have predicted that bars evolve by capturing nearby disk stars and employing them to make the bar more elongated and stronger. Therefore the light deficit in the disk is likely produced by bars, and thus bars play a major role in shaping their host galaxies, redistributing not only the gaseous but also the stellar mass within galaxies, with important consequences to their subsequent evolution.

[포 GC-12] Effect of stellar mass black holes in the globular clusters on the detection rate of binary black hole mergers.

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Binary black hole mergers are one of the important candidate of gravitational wave (GW) emission. Recently a successful GW observation was done by LIGO team, but it is still uncertain how many GW signals will be observable. In this research, we perform simplified N-body simulations containing three mass components, ordinary stars with two kind of stellar mass black holes. Various BH compositions are tested to investigate the effect of BH mass function on binary formation rate. As a result, we find the binary formation rate is not much affected by BH mass function and always around 30 %, but the detectable merging binaries are largely depend on higher mass BH population.

[포 GC-13] REVERBERATION MAPPING OF PG 0934+013 WITH THE SOUTH AFRICAN LARGE TELESCOPE

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We present the variability and time lag measurements of PG 0934+013 based on the photometric and spectroscopic monitoring campaign over two years. We obtained 46 epochs of data from the spectroscopic campaign, which was carried out using the South African Large Telescope with 1 week cadence over two sets of 4 month-long observing period, while we obtained 80 epochs of B band data from the campaign. Due to the six month gap between two campaigns, we separately measured the time lag of the H β emission line by comparing the emission line light curve with the B band continuum light curve using the cross-correlation function techniques. We determined the time lags and black hole mass.

[포 GC-14] Environment of Warped Galaxy

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We analyze the dependence of environment of warped galaxies by using the local background density, Tidal Index and projected distance as measures of the environment. we use galaxies with redshift less than $z=0.025$ from the Sloan Digital Sky Survey (SDSS) DR7. We selected 345 edge-on galaxies using color images provided by the SDSS DR7 and checked it using isophotal maps. This sample contains 136 warped galaxies, 209 non-warped galaxies. Among warped galaxies, there are 18 strongly warped galaxies which have warp angles larger than 7.5σ . We calculated the fractional distributions of galaxies as a function of environmental parameters. All of these parameters show little difference between warped galaxies and non-warped galaxies if we include weakly warped galaxies. However, there is a clear difference in the fractional distributions between the strongly warped galaxies and non-warped galaxies. The fraction of warped galaxies increases with decreasing distance to the nearest neighbor galaxy but It increases with increasing background density and Tidal Index. However, the relationships between warp angles and the three environmental parameters are not strong. The effect of Tidal Index is well distinguished in small, bright galaxies whereas the effects of the background density and the distance to the nearest neighbor galaxy are more pronounced in large, bright galaxies.

[포 GC-15] The milli-arcsecond scale radio properties of central AGNs in cool-core and