

[초CD-01] Understanding our Universe with the REFLEX II cluster survey

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Clusters of galaxies provide unique laboratories to study astrophysical processes on large scales, and are also important probes for cosmology.

X-ray observations are still the best way to find and characterise clusters. The extended ROSAT-ESO flux-limited X-ray (REFLEX II) galaxy clusters form currently the largest well-defined and tested X-ray galaxy cluster sample, providing a census of the large-scale structure of the Universe out to redshifts of $z=0.4$. I will describe the properties of the survey and the X-ray luminosity function, which led to our recent cosmological constraints on Ω_M - σ_8 . They tighten the previous constraints from other X-ray experiments, showing good agreements with those from the Planck clusters, but some tension exists with the Planck CMB constraints.

The second part of my talk will concern the structure of the local Universe, and the study of the first X-ray superclusters. The density of the clusters reveals an under-dense region in the nearby Universe, which has an interesting implication for the cosmological parameters. Using the X-ray superclusters, that are constructed with a physically motivated procedure, I will show environmental aspects that X-ray superclusters provide, and compare to cosmological N-body simulations.

[구CD-02] Testing Modified Gravity with the Universal Effect of Large Scale Velocity Shear on the Satellite Infall Directions

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고립된 은하주위의 위은하들의 편향된 낙하 운동을 보인다. 이 편향성을 결정하는 요소는 속도가위장의 비등방성인데 속도가위장의 단축으로 위은하들의 낙하가 일어나는 관측적 증거를 제시하고 이 편향성을 측정하여 은하단과 은하의 동력학적 질량을 결정한 후 궁극적으로 중력 법칙을 검증한다.