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[구 GC-20] A Weak-lensing Study of the Double Radio Relic Galaxy Cluster Abell 1240

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Abell 1240 is a merging galaxy cluster hosting prominent, symmetric double radio relics. To constrain its merging history, we provide the first weak-lensing analysis of the dark matter distribution of the Abell 1240 field with Subaru/Suprime-Cam observations after robustly addressing instrumental systematics. We also investigate the cluster galaxy distributions, combining our new MMT/Hectospec observations and the spectroscopic redshifts from the literature. Both weak-lensing mass reconstruction and galaxy distribution show that Abell 1240 consists of two subclusters stretched north to south between the double radio relics. We quantify the significance of the substructures and present their mass estimates. Finally, we discuss a merging stage of Abell 1240 with the current weak-lensing results and the radio relic priors.

[구 GC-21] Multi-wavelength view of SPT-CL J2106-5844: A massive galaxy cluster merger at z~1.13

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SPT-CL J2106-5844 is the most massive galaxy cluster at z>1 discovered to date. It has been known to be an isolated system with a singular, well-defined halo. However, recent studies provide lines of evidence for its merging state. We strengthen the case with the multi-wavelength observations from ALMA, ACA, ASKAP, ATCA, and Chandra. With the sensitive, high resolution ALMA+ACA observations, we reconstruct the ICM pressure map from the thermal SZ effect. It reveals two main gas components that are associated with the mass clumps inferred from the weak-lensing analysis. Furthermore, the X-ray hardness map supports the bimodal gas distribution. With these multi-wavelength data, we probe the merger phase in SPT-CL J2106-5844.

항성 및 항성계

[구 SA-01] Messier 3: An Extra-Galactic System with Two Globular Clusters

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We present Ca-CN-CH-NH photometry for the globular cluster (GC) M3. Our new photometric system combined with robust and self-consistent theoretical fine model grids allows us to measure key elements in stellar populations, [Fe/H], [C/Fe], and [N/Fe], even in the extremely crowded fields. Our results show that M3 consists of two GCs with different chemical abundances, structural and kinematical properties. Furthermore, each GC has its own carbon-nitrogen anticorrelation with whose fractions of the CN-weak populations are consistent with those in the Magellanic Clouds. We suggest that M3 is a merger remnant of two GCs, most likely in a dwarf galaxy environment and accreted to our Milky Way Galaxy later in time.

[구 SA-02] Absolute Dimension and Pulsational Characteristics of the Eclipsing Binary EW Boo with a δ Sct Pulsator

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