T09a

Two-Phase ICM in the Central Region of the Rich Cluster of Galaxies Abell 1795: A Joint Chandra, XMM-Newton, and Suzaku View

○ Gu Liyi (SJTU, University of Tokyo)、Kazuo Makishima (University of Tokyo)、Xu Haiguang (SJTU)

Based on a detailed analysis of the high-quality *Chandra*, *XMM-Newton*, and *Suzaku* data of the X-ray bright cluster of galaxies Abell 1795, we report a clear preference for a two-phase intracluster medium (ICM) model, which consists of a cool ($T_{\rm c} \approx 2.0 - 2.2$ keV) and a hot ($T_{\rm h} \approx 5.0 - 5.7$ keV) component that coexist and dominate the X-ray emission in the central $80 h_{71}^{-1}$ kpc. A third weak emission component ($T_3 \approx 0.8$ keV) is also detected within the innermost $144 h_{71}^{-1}$ kpc and is ascribed to the inter-stellar medium (ISM) of the cD galaxy. By analyzing the emission measure ratio and gas metal abundance maps created from the *Chandra* data, we also detect a possible correlation between the spatial distributions of the cool phase gas and metal-rich gas in the $50 - 100 h_{71}^{-1}$ kpc region. We employ the cD corona model to explain the origin of the coexistence of the hot and cool phase ICM, by comparing model predictions with measured gas temperature, density, and emission measure distributions. We find that AGN feedback energy released in the innermost $10 h_{71}^{-1}$ kpc can serve as the heating source to prevent the cool phase gas from cooling down to temperatures much lower than the observed values.