The Accretion History of Galaxy Clusters: Evidence for the Missing Baryons?

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A Sunyaev-Zel'dovich effect (SZE) survey of galaxy clusters using the South Pole Telescope has delivered a sample of hundreds of approximately mass selected clusters extending to redshift z~1.8. We use X-ray followup observations of these clusters together with multiband photometry from the Dark Energy Survey, Spitzer and WISE to measure the baryon content of these systems as a function of mass and redshift. We find strong variations in the baryon fraction with mass such that the baryon fraction in low mass clusters is lower than that of the high mass clusters. Our study provides evidence that this mass trend has been in place since redshift z~1 and has changed very little since. We explore how massive galaxy clusters that grow by accreting lower mass clusters and groups can end up with higher baryon fractions than the infalling subclusters. A plausible scenario involves significant smoother accretion of material from outside the dense central regions of clusters and thereby provides evidence for the existence of these so-called "missing baryons".

Einführung: Priv.-Doz. Dr. D. Bomans

Die Fakultät lädt alle Interessierten herzlich ein.

Ab 11.45 Uhr Kaffee/Tee im Hörsaal