Seminarium Astrofizyczne
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Joanna Piotrowska
(Kavli Institute for Cosmology, Cambridge)

Role of gas fraction and star formation efficiency in galaxy quenching

Understanding the physics behind galaxy transition to quiescence is one of the most important questions in the field of galaxy formation and evolution. In order to differentiate between different proposed mechanisms, we use an indirect method to estimate gas masses for 61,000 SDSS DR7 galaxies. To achieve this, we infer gas column densities from dust mass densities as traced by extinction, applying a metallicity correction to account for varying dust-to-metal ratios. We find that both gas fraction and star formation efficiency (SFE) decrease as we move away from the star forming main sequence (MS) for all galaxy masses. We further show that both quantities correlate similarly strongly with the departure from the MS, implying the need for any physical model of quenching to invoke a change in both gas fraction and SFE. We are currently exploring such potential models by comparing our observational results with the Illustris, IllustrisTNG and EAGLE simulations, focusing primarily on the role of supermassive black holes in regulating the gas content and SFE of their hosts at present epoch.

Serdecznie zapraszam,

Agnieszka Majczyna