Seminarium Astrofizyczne

wtorek 11 lutego godz. 12:30
ul. Pasteura 7, sala 404
transmisja on line
https://meet.goto.com/NCBJmeetings/seminarium-astrofizyczne
Password: AstroSemi

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The Multi-Faceted Nature of Galaxy Evolution: The role of molecular gas, winds, environment and star formation histories

The growth of galaxies is a complex process shaped by interconnected factors such as in-situ star formation, gas conditions, large-scale accretion and mergers, as well as environmental influences. Accreting supermassive black holes (active galactic nuclei, AGN) also play a crucial role by regulating star formation through powerful feedback, preventing excessive growth in massive galaxies. I will discuss observational insights on diverse drivers of galaxy evolution across a range of redshifts and galaxy populations.

First, I will introduce the JWST Early Release Science Program Q3D, which targets three luminous red quasars at z=0.4-3 with large-scale outflows, examining their spatially resolved properties and their impact on their hosts. These massive, dusty AGN host extreme ionised winds (reaching thousands of km/s in [OIII]) and are thought to represent an early "blow-out" phase, triggered by recent inflows of gas and dust. In addition, I will highlight the discovery of a protocluster candidate around the z=3 quasar, with new JWST/NIRISS grism observations offering a glimpse into the formation of massive structures in the early Universe.
At low redshift (z=0.03), I will discuss findings from the MaNGA-ARO survey of CO targets (MASCOT), which links molecular gas properties with spatially resolved optical data. These observations reveal a subset of galaxies that may represent a late evolutionary stage, characterized by reduced star-forming efficiencies, low-velocity ionized outflows, and signatures of metal mixing. Finally, I will address to what extent the present-day star formation in galaxies may be linked to their early histories of star formation. Using the stellar population synthesis code Bagpipes, I will constrain the star formation histories of massive star-forming (non-AGN) MaNGA galaxies, offering insights into the long-term evolution of their stellar populations.

Serdecznie zapraszam,
Aidan Cotter, on behalf of the SOC