

Seminarium Astrofizyczne
wtorek 17.12.2024 godz. 12:30
ul. Pasteura 7, sala 404

transmisja on line
<https://meet.goto.com/NCBJmeetings/seminarium-astrofizyczne>
Password: AstroSemi

Claudia Di Cesare
(Institute of Science and Technology, Austria)

The assembly of dusty galaxies at $z \geq 4$: scaling relations using ALMA and JWST results together with cosmological simulations

In this talk, I will explore the evolution of galaxies at $z \geq 4$ by combining insights from cosmological simulations and observations from ALMA and JWST. Using the hydrodynamical code dustyGadget, I will discuss predictions for the star formation history, stellar mass density, and several galaxy scaling relations—well-established at lower redshifts—such as the galaxy main sequence and the stellar-to-dust mass relation for the early Universe.

I will then present new results from the Cycle 2 JWST ALT survey (PIs: Matthee & Naidu) on the SFR- M_\star relation, using a statistical sample of ~ 400 H α -selected galaxies with $\log(M_\star / M_\odot) = 6-10$ at $4 < z < 5$. I will delve into the investigation of galaxy star formation histories (SFH), employing diverse indicators (e.g., H α and UV luminosity) sensitive to SFR variations on different timescales. These provide insights into whether star formation in the early Universe was smooth or bursty.

Finally, I will focus on selected systems to discuss (i) the properties of their environments at $z \sim 4.5$ in terms of their assembly histories and feedback processes, and (ii) the role of interactions between galaxies and their surrounding environments in driving galaxy evolution.

Throughout the talk, I will highlight the invaluable contributions of ALMA and JWST in constraining the physical properties of early galaxies and emphasize the importance of combining simulations and observations to advance our understanding of galaxy evolution in the redshift range $4 \leq z \leq 10$.

Serdecznie zapraszam,
Prasad Sawant, on behalf of the SOC