

Title: JWST insights into the galaxy candidates at $z > 9$

Abstract: In this talk, I will present our findings from the deep NIRCam imaging campaign from the UNCOVER survey. Through observations of the lensing cluster A2744, we discovered 19 galaxy candidates at a redshift range of $9 < z < 13$. Detailed study of these candidates shows a rapid evolution of the mass-luminosity relation, but also the UV continuum slope β , towards high redshift. Remarkably, a few of these candidates at $z > 9$ show a clear indication of a Balmer break or strong optical emission lines. Additionally, 4 sources were observed with ultra-deep NIRSpec follow-up observations, which led to a 100% spec-z confirmation rate, confirming the reliability of the photometric sample.

Moreover, using comprehensive lensing simulations, we constructed the most accurate UV luminosity function at $z > 9$. I will show how our analysis led to a clear overabundance of bright ($M_{\text{UV}} > -20$) galaxies, which reach a factor of 10-100 higher than theoretical predictions and previous HST findings, and which is in line with recent JWST studies and newest models. I will present our plans with the JWST Cycle 2 program GLIMPSE, which is expected to obtain the deepest observations on the sky to date and identify the faintest galaxy population from the Dark Ages to the epoch of reionization.