

UCLA Department of Physics & Astronomy

COLLOQUIUM

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The JWST Revolution in Galaxy Formation: It's the Spectra, Stupid!

Alice Shapley

UCLA



Understanding the formation and evolution of galaxies remains one of the great challenges of modern cosmology. Key outstanding questions include: What are the physical processes driving the formation of stars in galaxies? How do galaxies exchange material with their intergalactic environments? How do the impressive variety of galactic structures that we observe today assemble? How do supermassive black holes affect the evolution of their host galaxies?

We present a brief history of rest-optical spectroscopic probes of the galaxy formation process at high redshift, ranging from early ground-based attempts to the very latest results from the James Webb Space Telescope, which has revolutionized our ability to learn about the most distant galaxies in the universe. We focus in particular on questions related to the evolving enrichment and physical conditions in the interstellar medium of star-forming galaxies in the early universe, as these place critical constraints on the cycle of baryons through galaxies over cosmic time.