

Abstract:

Clumpy Galaxies in the Early Universe (Debra Elmegreen, Maria Mitchell Professor of Astronomy, Vassar College)

Photometric studies of 1000 large galaxies out to redshift $z=5$, imaged by the Hubble Space Telescope in the Ultra Deep Field, reveal details of galaxy evolution. These distances probe ages less than 2 billion years after the Big Bang. Galaxies in the early Universe include unusual morphologies not seen locally, such as chains, clump clusters, and tadpoles, in addition to spirals and ellipticals. These clumpy galaxies contain star-forming regions nearly 100 million times the mass of our sun, much more massive than star-forming complexes in nearby galaxies. Observations and numerical simulations will be discussed in the context of how these clumpy galaxies transform into the familiar local systems.