Z101r In-situ evolution of high-redshift galaxies

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Galaxy mergers/interactions can reasonably explain some observational results in high-redshift galaxies. At the peak of cosmic star formation history, massive galaxies are commonly forming stars with a star formation rate of more than 100 $M_{\odot}\mathrm{yr}^{-1}$. In the local Universe, we see such a starburst only in merging galaxies. A big difference between nearby and high-redshift star-forming galaxies is the fraction of gas mass. CO and dust continuum observations of high-redshift galaxies reveal that 30-50% of baryonic mass is molecular gas, which is by a factor of 3-5 higher than in nearby galaxies. The large gas reservoirs naturally explain the high SFRs without mergers. IFU observations of ionized gas also show that the majority of high-redshift galaxies has an ordered-rotating disk, rather than disturbed kinematics. High-redshift galaxies probably undergo major/minor mergers, but the role of mergers in the galaxy evolution is likely indirect unlike nearby galaxies. In this talk, I will review recent observational studies of high-redshift galaxies in terms of "in-situ evolution".