

The MOSDEF Survey: The Star-Forming Main Sequence at $z \sim 2$

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Abstract

We investigate the correlation between the stellar mass and the star-formation rate (SFR) among star-forming galaxies at $z \sim 1.5 - 2.3$ from the MOSFIRE Deep Evolution Field (MOSDEF) survey. The MOSDEF survey is a four-year project that uses the NIR MOSFIRE spectrograph on the 10-m Keck I telescope to characterize the gaseous and stellar contents of ~ 1500 mass-selected galaxies at $1.5 \leq z \leq 3.5$. With a large sample of ~ 250 spectroscopically confirmed galaxies with observed $H\alpha$ and $H\beta$ lines we calculate dust-corrected instantaneous SFRs. SFRs are also inferred from the UV luminosity and dust-corrected using the UV slope. Comparing the star-forming main sequence based on the two independently estimated SFRs, provides insight into some the main debates on whether the relation and its scatter is affected by the assumed diagnostic of SFR. By using SFR tracers that are sensitive to different timescales, we can assess the degree to which galaxies are smoothly building up their stellar masses during a time when they will be forming most of their mass.