

X44a The First NIRCам-MIRI Joint Color Selection for $z \sim 10$ Little Red Dots

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JWST has discovered a new, abundant population at the high-redshift Universe called “*little red dots*” (LRDs). LRDs are characterized by their rest-UV-to-optical V-shape SED with a valley at the Balmer break, compact morphologies, and broad Balmer emission lines. While the physical nature of LRDs remains under debate, one plausible hypothesis is that LRDs are active galactic nuclei. Previous studies have found that the number density of LRDs peaks at $z \sim 6$ and rapidly declines toward lower redshifts, suggesting that LRDs may trace an very early phase in the formation of supermassive black holes (SMBHs). However, previous LRD samples are limited to $z \lesssim 9$, because prior selection relied solely on NIRCам photometry (up to $\sim 5 \mu\text{m}$), restricting the ability to identify more distant sources. In this study, we perform the first search for LRD candidates at $z \sim 10$ using both NIRCам and MIRI photometry (up to $\sim 8 \mu\text{m}$) from COSMOS-Web, which has the largest joint coverage of both so far. We identify one solid $z \sim 10$ LRD candidate with a clear F115W dropout and a V-shape SED. In the talk, we will present the first constraint on the luminosity function and LRD fraction at $z \sim 10$ and also discuss prospects for spectroscopic follow-up and increasing the sample size.