The evolution of dust continuum properties from z=6 to the cosmic noon in the *z*-GAL sample of dusty star-forming galaxies

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The study of dusty star-forming galaxies (DSFGs) is an ongoing frontier in astrophysics, continuously yielding new insights into these cosmic nurseries from the early Universe. Thanks to advancements in observational facilities, we now have access to high-resolution data across various wavelengths, which is crucial for better understanding the physical characteristics and nature of DSFGs. This knowledge contributes to our broader comprehension of galaxy formation and evolution.

In this study, we investigate the continuum dust properties of 137 *Herschel*-selected DSFGs in the *z*-GAL sample within the redshift range $1 < z < 6$. Using data from the Northern Extended Millimeter Array (NOEMA) in the 2 and 3-mm wavebands, along with the *Herschel*-SPIRE and SCUBA-2 850 µm data, we perform an extensive mock data analysis using the modified blackbody. Our analysis yields precise estimates of the dust temperature, emissivity index, and the apparent dust masses and FIR luminosities for these sources. Using these results and a large sample of sources, we investigate the evolution of the dust properties across cosmic time. We report an increasing trend in the dust temperature as a function of redshift at a rate of 6.5 ± 0.5 K/*z* for this sample.