

Writing Jazz

UNCOVER: Ultra-deep NIRCam and NIRSpec Observations Before the Epoch of Reionization

We propose an efficient public Treasury program that immediately establishes a NIRCam imaging deep field and ultra-deep low-resolution NIRSpec/PRISM follow-up spectroscopy in the gravitational lensing cluster Frontier Field Abell 2744. Assisted by strong lensing, these observations reach 1-2 magnitudes fainter than even the deepest ERS & GTO programs. Such depths are essential to achieve two core science goals of JWST: finding First Light galaxies during the Dark Ages at $z > 10$ and studying the ultra-low luminosity galaxies at later times that were responsible for reionization. Offering the community early access to deep imaging of 4000 $z > 6$ galaxies and spectroscopy of 500 galaxies ensures that this envisioned flagship science is guaranteed early in the mission, establishes from the start a vibrant and diverse user base for the observatory, and optimizes the efficiency of JWST by providing targets for higher resolution spectroscopic follow up in subsequent cycles. In support of this, we included imaging parallels to enhance the deep imaging legacy on and around the cluster. Beyond the immediate science goals, these data will support a broad array of legacy science including stellar mass complete studies to $z = 10$, the role of dust obscuration at high redshift, and the various pathways of quenching star formation. Our experienced team commits to rapidly releasing the imaging to the public before the Cycle 2 deadline followed by the delivery of a joint photometric and spectroscopic database.

Proposal

Strategy

Importance of Solution

Broader Impact