

# The Cosmic Evolution Early Release Science (CEERS) Survey

Scientific Category: Galaxies and the IGM

Scientific Keywords: Dust, Emission-Line Galaxies, Galaxy Formation and Evolution, Spectral Energy Distributions, Structure and Morphology

Instruments: NIRSPEC, MIRI, NIRCAM

Proprietary Period: 0 months

Allocation Information (in hours): Prime Parallel

Science Time: 36.6 31.1

Charged Time: 63.2

## Abstract

We propose the Cosmic Evolution Early Release Science (CEERS) Survey (NOI #135), which covers 100 sq. arcmin with JWST imaging and spectroscopy, and is designed to achieve the DD-ERS goals.

CEERS will inform the selection of a wide variety of spectroscopic targets for Cycle 2 with a practical choice of imaging area, depth, and wavelength coverage, targeting a field that is supported by a rich set of HST/CANDELS multi-wavelength data.

CEERS will demonstrate, test, and validate efficient extragalactic surveys with coordinated, overlapping parallel observations with the JWST instrument suite, including NIRCAM and MIRI imaging, NIRSpec R~100 and R~1000 spectroscopy, and NIRCAM slitless grism (R~1500) spectroscopy. These tests enable Cycle 2 observations, including validating JWST parallel observing modes, dither and exposure-time strategies, and spectroscopic observing modes including slit-loss corrections.

CEERS enables immediate community science into both extragalactic JWST science drivers “First Light and Reionization” and “The Assembly of Galaxies”, including: 1) The discovery of 20-80 galaxies at  $z\sim 9-13$ , constraining their abundance and physical nature; 2) Deep spectra of  $>400$  galaxies at  $z>3$ , including 40 known candidates at  $6<z<9$ , enabling redshifts and constraints on physical conditions of star-formation and black hole growth via line diagnostics; 3) Quantifying the first bulge and disk structures at  $z>3$ ; and 4) Characterizing galaxy mid-IR emission to study dust-obscured star-formation and supermassive black hole growth at  $z\sim 1-3$ .

The CEERS collaboration is diverse on many axes with demonstrated expertise in rapid delivery of high-level science products.

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## Investigators:

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Number of investigators: 18

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