Near Infrared Spectrograph

The JWST Near Infrared Spectrograph (NIRSpec) enables 0.6–5.3 µm spectroscopy at resolving powers of ~100, ~1,000, and ~2,700 in four observing modes. NIRSpec is designed to be particularly powerful for multiplexing spectroscopy and high contrast, high throughput single-object spectroscopy.

Key science uses of NIRSpec include, but are not limited to: statistical survey spectroscopy for galaxy formation and evolution studies, characterization of stellar populations, spatially resolved spectroscopy of extended targets, and characterization of exoplanet atmospheres using transit observations.

The four observing modes of NIRSpec are:

- Multi-object spectroscopy (MOS) with the Micro-Shutter Assembly (MSA)
- Imaging spectroscopy with the Integral Field Unit (IFU)
- High contrast single object spectroscopy with the Fixed Slits (FSs)
- High throughput bright object time-series (BOTS) spectroscopy with the NIRSpec wide aperture

Each mode in NIRSpec has its own planning interface template in the Astronomer's Proposal Tool (APT) software. Follow the links below to access the documentation for each of the observing modes:

- NIRSpec IFU Planning in APT
- NIRSpec Fixed Slit Planning in APT
- NIRSpec Bright Object Time Series Planning in APT
- NIRSpec MOS Planning in APT

Information about calibration is available at JWST Calibration Programs and Data. This article and its links point to content about absolute astrometric, flux, and wavelength calibration, as well as information on calibration reference files.

Details about the data can be found in the JWST File Names, Format, and Data Structures article. The JWST pipeline is described in JWST Data Reduction Pipeline and some information about post-pipeline processing can be found at JWST Post-Pipeline Data Analysis.

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More about NIRSpec

NIRSpec Overview

Instrument Hardware and Operations

Downloadable Instrument PDF

General JWST: Proposal Planning, Strategies, and Science Use Cases

General JWST: Data Access, Calibration, and Analysis

External NIRSpec links and documents

NIRSpec at STScI

NIRSpec at ESA

NIRSpec at ESA for scientists

NIRSpec at NASA

Lectures

JWST Community Lecture Series - NIRSpec Overview (P. Ferruit)

Other documents

JWST Pocket Guide

JWST technical documents

NIRSpec

Near Infrared
Spectrograph

Recently Updated

NIRSpec MSA Planning Tool, MPT
May 05, 2019 • updated by Shireen Gonzaga • view change

NIRSpec Bright Object Time-Series Spectroscopy
May 03, 2019 • updated by jti user • view change

NIRSpec and MIRI IFU Observations of Cas A
May 03, 2019 • updated by jti user • view change

NIRSpec Training Webinars and Webcasts
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MIRI Imaging, MIRI MRS, and NIRSpec IFU Observations of SN1987A
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NIRSpec IFU Wavelength Ranges and Gaps
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