

A JWST Study of the Starburst-AGN Connection in Merging LIRGs

Scientific Category: Galaxies and the IGM

Scientific Keywords: IR-Luminous Galaxies, Interacting/Merging Galaxies, Starburst Galaxies

Alternate Category: Massive Black Holes And Their Host Galaxies

Instruments: NIRSPEC, MIRI, NIRCAM

Proprietary Period: 0 months

Allocation Information (in hours):

Science Time: 8.7

Charged Time: 31.0

Abstract

Galaxies evolve through a combination of secular processes, such as cold gas accretion, and nonsecular processes, such as galactic mergers, which can trigger massive starbursts and powerful AGN. JWST will transform our understanding of galactic evolution, providing a detailed look at the physics of star formation and black hole growth in nearby and distant galaxies. By using NIRSPEC, NIRCAM and MIRI, we will create a rich dataset for understanding the dynamics and energetics of the ISM on scales of 50-100pc in the nuclei of local Luminous Infrared Galaxies (LIRGs). Our targets cover a range of starburst-to-AGN power and IR spectral properties, and are all visible to JWST over the first 5 months of Cycle-1. We will target each nucleus with the NIRSPEC and MIRI IFUs to cover the full spectral range from 0.96-29 microns, and obtain deep, wide-field NIRCAM and MIRI images in the F150W, F200W, F335M, F444W, F560W, F770W and F1500W filters. The total time for our proposal (NOI #80) is 30.97hrs.

Our science-enabling products include multi-wavelength, ancillary datasets from Spitzer, ALMA, JVLA, AKARI and HST, valuable cross-calibration infrared data from Spitzer and AKARI, together with custom spectral fitting software which we will deliver and use to analyze the JWST spectral cubes. The proposed observations will be scientifically compelling in their own right, and they will also demonstrate to the community how to fully explore the power of JWST to unravel the complex galactic ecosystems in nearby active and starburst galaxies. This proposal will set the stage for more extensive studies of active and starburst galaxies at low and high-redshift in Cycle-2 and beyond.

Investigators:

Investigator	Institution	Country
P Appleton	California Institute of Technology	USA/CA
L Armus	California Institute of Technology	USA/CA
L Barcos-Munoz	Associated Universities, Inc.	USA/VA
* V Charmandaris	University of Crete	GRC
T Diaz-Santos	Diego Portales University	CHL
A Evans	The University of Virginia	USA/VA
J Howell	California Institute of Technology	USA/CA
* H Inami	Centre de Recherche Astrophysique de Lyon	FRA
K Larson	California Institute of Technology	USA/CA
S Linden	The University of Virginia	USA/VA
M Malkan	University of California - Los Angeles	USA/CA
J Marshall	Glendale Community College	USA/CA
J Mazzarella	California Institute of Technology	USA/CA
A Medling	California Institute of Technology	USA/CA
E Murphy	Associated Universities, Inc.	USA/VA
G Privon	Pontificia Universidad Catolica de Chile	CHL
J Rich	Carnegie Institution of Washington	USA/DC
D Sanders	University of Hawaii	USA/HI
S Stierwalt	The University of Virginia	USA/VA
J Surace	Eureka Scientific Inc.	USA/CA
V U	University of California - Riverside	USA/CA

Number of investigators: 21

* ESA investigators: 2