Nearby Galaxies under a New Light with Roman (Splinter Meeting)

Description:

We welcome scientists to participate in a Splinter Session at the 241st Meeting of the American Astronomical Society organized by the Science Operations Center for the Nancy Grace Roman Space Telescope. If you are attending the AAS241, you may add this to your schedule using its entry in the Block Program Schedule. Registration for the AAS241 meeting is not required to participate in the session virtually either through synchronous or asynchronous options.

Splinter Session Abstract:

The Roman Space Telescope will provide HST-like spatial resolution in the optical and near-infrared, but with a field of view 200 times larger than HST/WFC3/IR. Even for single pointings, this provides data sets comparable to large survey projects with previous generation space-based observatories. Roman's large field-of-view will also quickly map the most nearby galaxies with resolved stars. Its superb astrometric capabilities will allow us to measure galaxy growth across space and time with unprecedented detail. Complementary, studies that map stellar populations with Roman in the most nearby galaxies will teach us valuable lessons to connect to observations and simulations of the early Universe. ALMA and JWST studies of galaxies probe the build-up of stellar mass at high redshift and, in complement, Roman will provide statistically significant samples to study how efficient metal production is during the most vigorous stages of galactic growth. The goal of this session is to bring together expertise from the local and more distant Universe to articulate how studies of the expanding horizon of the nearby Universe, with Roman, can be connected to our understanding of the most distant objects.

Ways to Participate:

In Person Attendance:

- Monday, January 9, 2023
- 1:00 PM - 3:00 PM
- Room 304, Seattle Convention Center

Synchronous Attendance:

- AAS241 Registration is not Required
- https://bluejeans.com/796078941/0478
  - 0478

Asynchronous Attendance:

- Recording Links to be posted here. https://cloudproject.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=a5e3d1dd-c2bd-4309-8000-af8d012d0283

Schedule of Presentations:

Speaker	Description	Duration	Start Time (US Pacific Time)	End Time (US Pacific Time)
	Welcome	5 min	13:00	13:05

Julie McEnery Roman Project Scientist Goddard Space Flight Center	**Roman Project Status & Updates** Abstract TBD	10 min + 5 min	13:05	13:20
L.Y. Aaron Yung NASA Postdoctoral Fellow Goddard Space Flight Center	**Yields from large-area, HST-resolution Galaxy Surveys in the Unresolved regime** Abstract TBD	10 min + 5 min	13:20	13:35

Karen Masters Professor of Physics & Astronomy Haverford College	**Galaxy Zoo: Morphology from Large Surveys** The Galaxy Zoo project (www.galaxyzoo.org) has provided quantitative visual morphologies for over a million galaxies (including the entire SDSS Main Galaxy Sample, all public HST surveys, UKIDSS, and most recently DECaLS and some HSC surveys) via online crowdsourcing. The most recent version of Galaxy Zoo combines machine learning techniques with crowdsourcing to leverage the best of both techniques for the next generation of large imaging surveys. The morphology of a galaxy provides information on the orbits of stars within it. As such, important clues to the formation history of galaxies is revealed by their morphologies, and this information is complimentary, but not identical to, their star formation history and chemical composition as revealed by photometry and spectra. Obtaining reliable morphologies for large samples of galaxies is challenging, but useful. In allows for statistical studies of the galaxy population, finding rare objects, and placing unusual classes of galaxies in context. The quantitative morphological information collected by Galaxy Zoo has shown itself to be a powerful database for studying galaxy evolution, and Galaxy Zoo continues to collect classifications - we either make use of public imaging, or we work with imaging/survey teams to collaborate to generate morphologies for their data. The GZ team also has experience running a variety of spin-off projects hosted by the Zooniverse (www.zooniverse.org). I will review how we obtain reliable morphologies from Galaxy Zoo, highlight some of the results from the last 15 years of the project and finish with some comment on what we might gain from a "Galaxy Zoo: Roman".	10 min + 5 min	13:35	13:50
Sabrina Stierwalt Assistant Professor of Physics Occidental College	**Exploring Dwarf Galaxy Mergers & Groups: Moving beyond the Local Group** Abstract TBD	10 min + 5 min	13:50	14:05

Anna Wright Assistant Research Scientist Johns Hopkins University	**Roman's Survey of Stellar Halos Using the FOGGIE Simulations** Over the next decade, the astronomical community will be deploying a number of instruments that will revolutionize our understanding of stellar halos. The Nancy Grace Roman Space Telescope, in particular, will combine extreme sensitivity with a wide field-of-view to become a powerful tool for studying the stellar halos of external galaxies. In this presentation, I will show brand new results from the FOGGIE (Figuring Out Gas & Galaxies In Enzo) cosmological simulations aimed at making predictions for Roman's survey of the stellar halos of nearby galaxies. The FOGGIE suite consists of zoom-in simulations of six Milky Way analogues in which resolution has been enhanced in the gas surrounding the central halo (the circumgalactic medium) and in the old stellar populations that typically make up stellar halos. This enables the simulations to better capture the quenching of dwarf galaxies as they are accreted, as well as the stellar substructure that their tidal destruction produces. I use the high-resolution FOGGIE simulations to "observe" the stellar halos of Milky Way-like galaxies at the same sensitivity and resolution as Roman will. I will explore the origins of these stellar halos and discuss Roman's prospects for disentangling the properties of the individual dwarf galaxies that created them.	10 min + 5 min	14:05	14:20
	Short Break	5 min	14:20	14:25
Andreea Petric, Jonathan Hargis, Rachael Beaton Science Operations Center for the Roman Space Telescope at STScI	**Discussion on Science Community Preparations for Roman Science** The following discussion prompts will be used: 1. Roman will provide HST-like imaging over large areas in the IR; this in itself will be transformative for nearby galaxy studies. What current and upcoming instruments (or surveys) will complement Roman, particularly in the science area of nearby galaxies? Are there limitations or hurdles to overcome in what currently exists or is planned? 2. In addition to thinking about the scientific capabilities of Roman, are there ways that we can strengthen, expand, and prepare the our science community in preparation for Roman? a. Are there conferences, workshops, or community-building events we could organize in the next three years that would be engaging for people working in this science area? b. Are there open source packages the community might want to rally around and add to, or build complementary packages for, to support doing science in nearby galaxies with Roman? c. Is there something that will be needed for nearby galaxies work that is entirely missing in the open-source software ecosystem?	20 min	14:25	14:45
	Closing	5 min	14:45	14:50

Other Roman Content at AAS241:

- STScI Events Listing: Roman at the 241st American Astronomical Society
- This Splinter Session in the AAS241 Block Schedule
- Back to Roman at AAS Home