



STScI | SPACE TELESCOPE
SCIENCE INSTITUTE

EXPANDING THE FRONTIERS OF SPACE ASTRONOMY

NIRCam Team Overview

Massimo Robberto

JWST User Committee Meeting – December 10, 2020



STScI NIRCam Team

ASTRONOMER



Armin Rest
Astronomer
Back-End Lead
Reference Files



Martha Boyer
Associate Astronomer
Branch Deputy
Cal Lead, Com Deputy



Nor Pirzkal – WFC3
ESA/AURA ASTRONOMER
WFSS Lead



Dan Coe - ACS
ESA/AURA Astonomer
Multi-Mission Help Desk Lead
JDOX lead

SCIENTIST



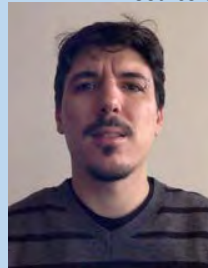
Massimo Robberto
Obs. Scientist
Branch Manager



Anton Koekemoer
Obs. Scientist
Calibration WG Lead
Mosaics & data products lead



John Stansberry
Obs. Scientist
Cross-Inst. Ops. WG Lead
Commissioning Lead



Matteo Correnti
STScI Scientist
Front-End Lead
Photometry WG Lead



Julien Girard
STScI Scientist
JWST Coronagraphy WG lead



Mario Gennaro
STScI Scientist
NRC Operations Deputy



Nikolai Nikolov
Associate Scientist
Transiting Exoplanets Lead

STAFF SCIENTIST



Bryan Hilbert
Snr. Staff Scientist, Sci. Supp.
Data Processing Lead
MIRAGE Simulator Lead



Leonardo Ubeda - NIRSPEC
Snr. Staff Scientist, Sci. Supp.
NIRCam-NIRSpec Simulations lead



Alicia Canipe
Staff Scientist, Sci. Supp.
DMS WG Lead
Help Desk

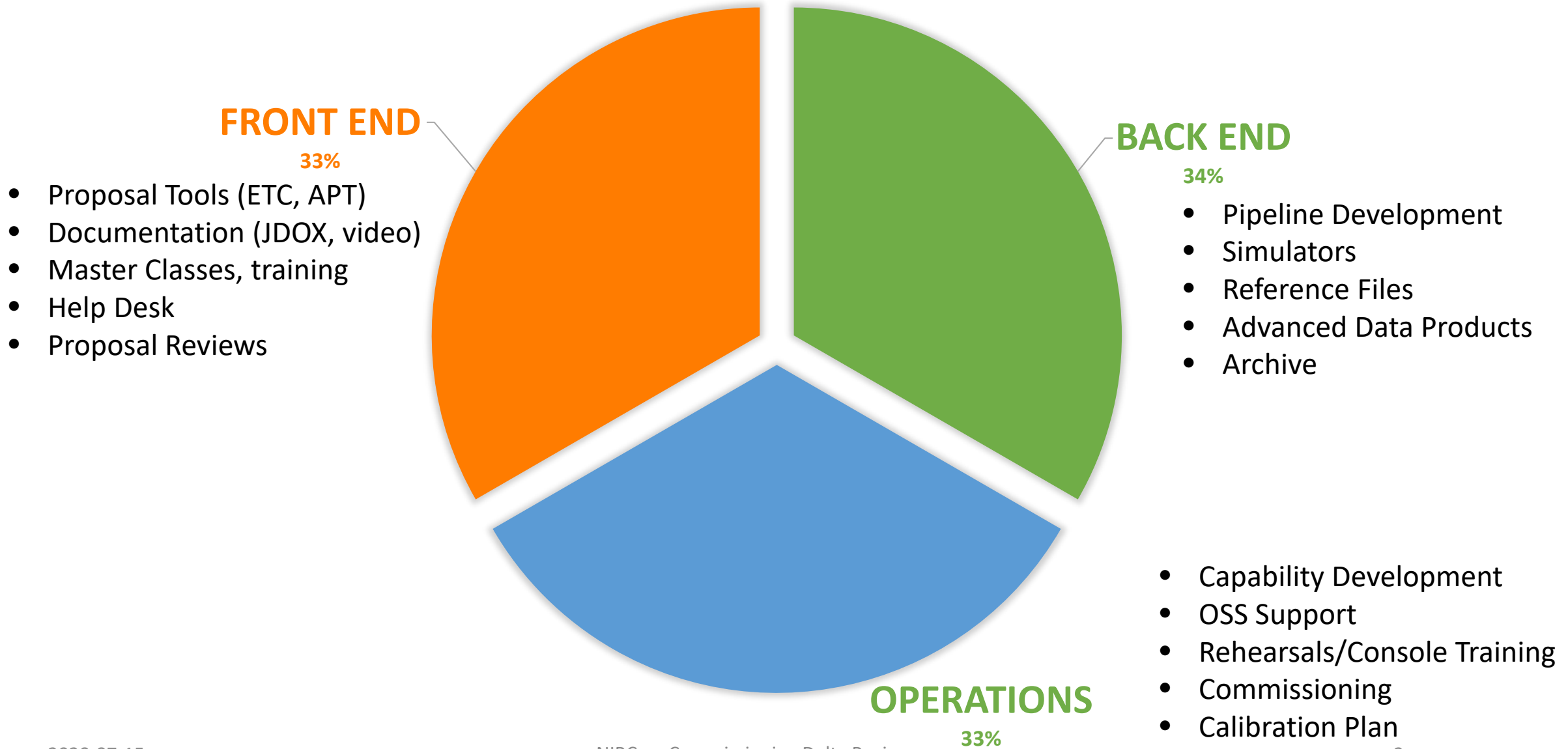


Brian Brooks
Staff Scientist, Sci. Supp.
ETC WG Help Desk Lead
ETC WG Deputy



Ben Sunnquist
Staff Scientist, Sci. Supp.
Data Processing Deputy
Detector Data Analysis

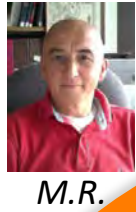
TEAM ORGANIZATION



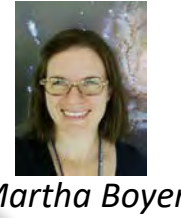
TEAM ORGANIZATION



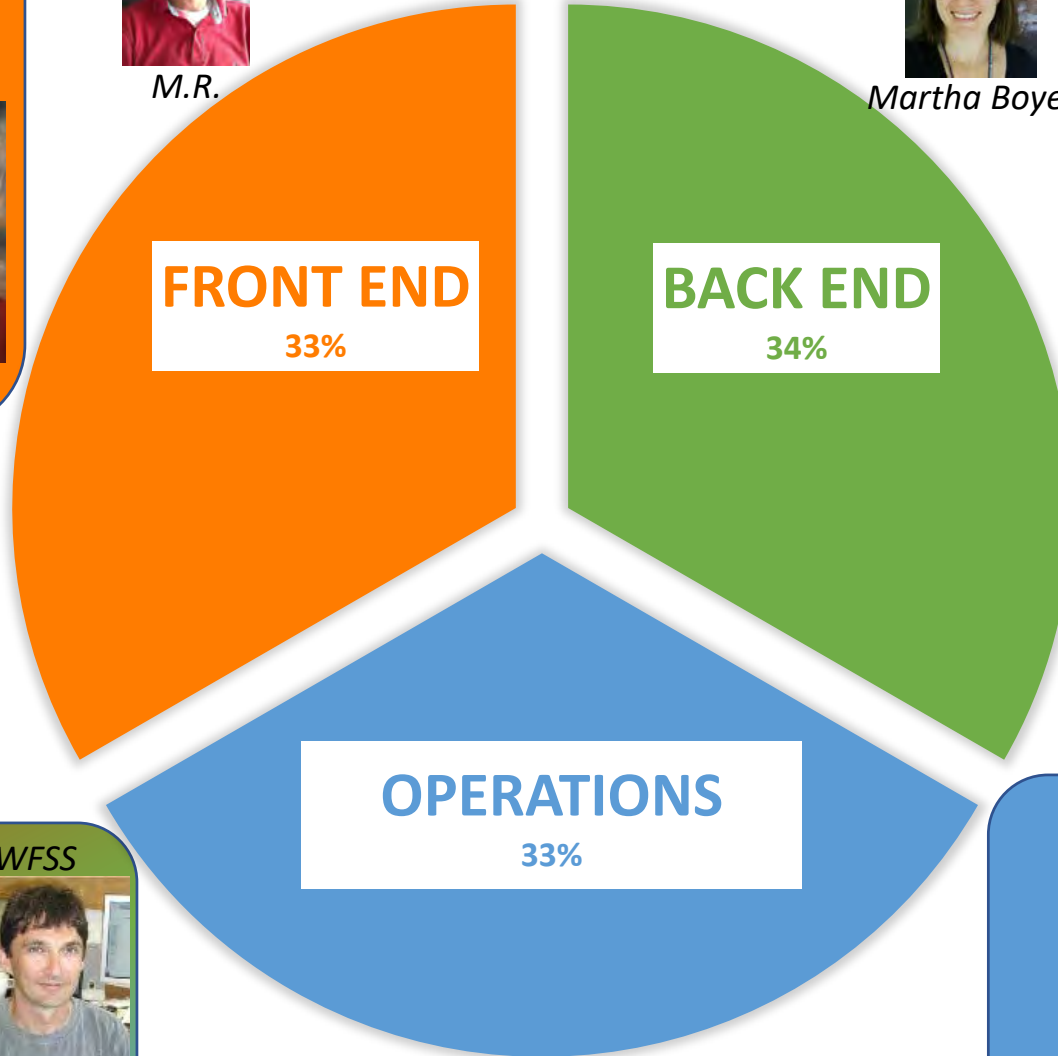
Matteo Correnti
Brian Brooks
Dan Coe



M.R.



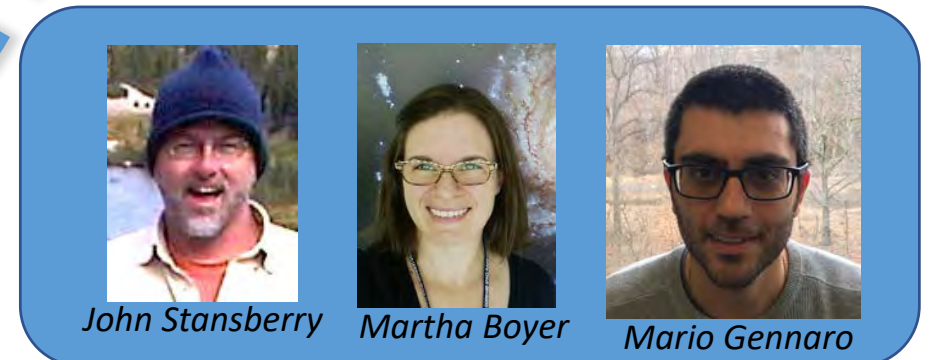
Martha Boyer



Armin Rest
Alicia Canipe
Bryan Hilbert
Anton Koekemoer
Ben Sunnquist
Leonardo Ubeda



Coronagraphy TSO WFSS
Julien Girard Nikolai Nikolov Nor Pirzkal



John Stansberry
Martha Boyer
Mario Gennaro



NIRCam Tactical Board

Back End

“after the data have been taken”

- Data Analysis Tools
- Reference File creation
- Quick Look/Monitoring tool
- Pipeline
- Simulations

Operations

“when data are taken”

- Cycle 1 Calibration plan
- Commissioning plan
- MOC Rehearsals
- OSS Support

Front End

“before taking the data”

- Master Classes
- Help Desk
- JDOX
- ETC

NIRCAM BOARD

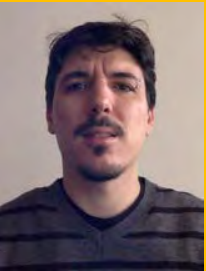
Weekly Meeting - Mon. 10:30AM



Massimo Robberto



Martha Boyer



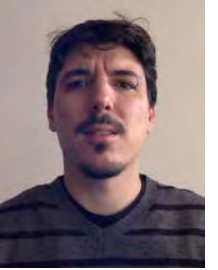
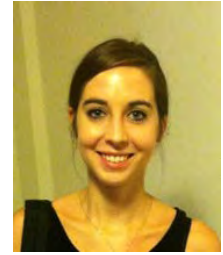
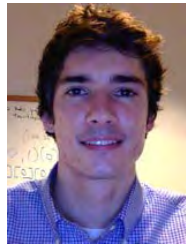
Matteo Correnti



Armin Rest

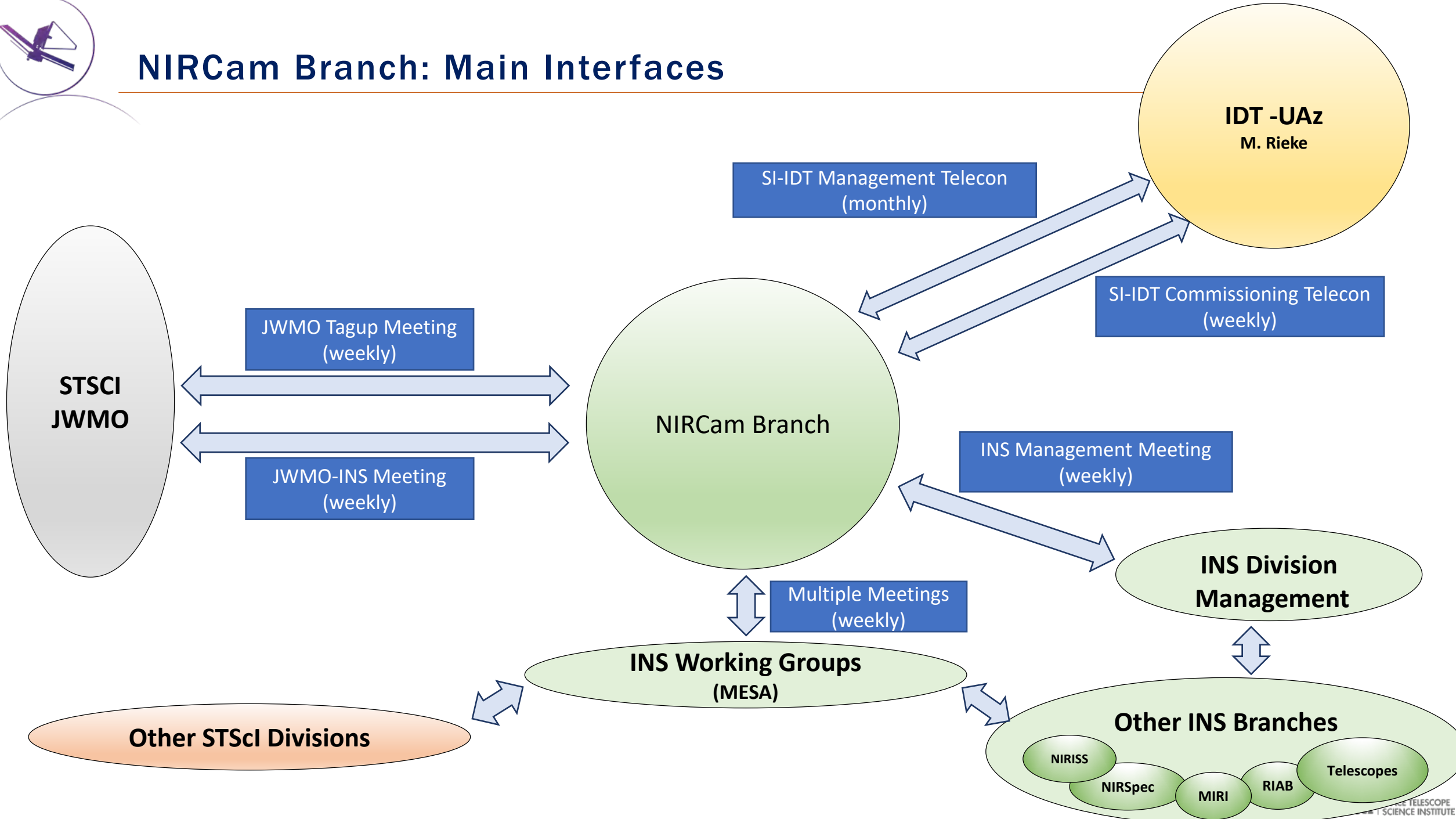


John Stansberry





NIRCam Branch: Main Interfaces

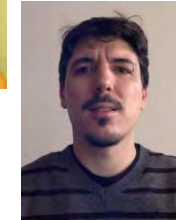


NIRCam Contribution to JWST Working Groups and Cross-Instrument Teams

B. Brooks
ETC Help Desk Lead
ETC WG Deputy



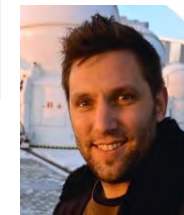
A. Canipe
DMS WG Lead



M. Correnti
Photometry Expert Group Lead



M. Gennaro
JWST Cross-Instr. PPS Lead



J. Girard
Coronagraphy WG Lead



B. Hilbert
Ref. Files Expert Group Lead

A. Koekemoer
Calibration WG Lead



J. Stansberry
Cross-SI Ops WG Lead



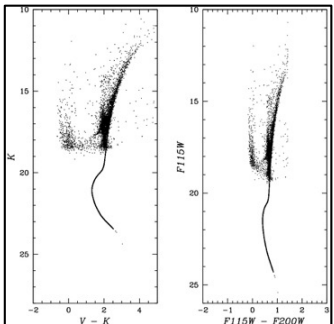
D. Coe
Multi-Mission Help Desk Lead



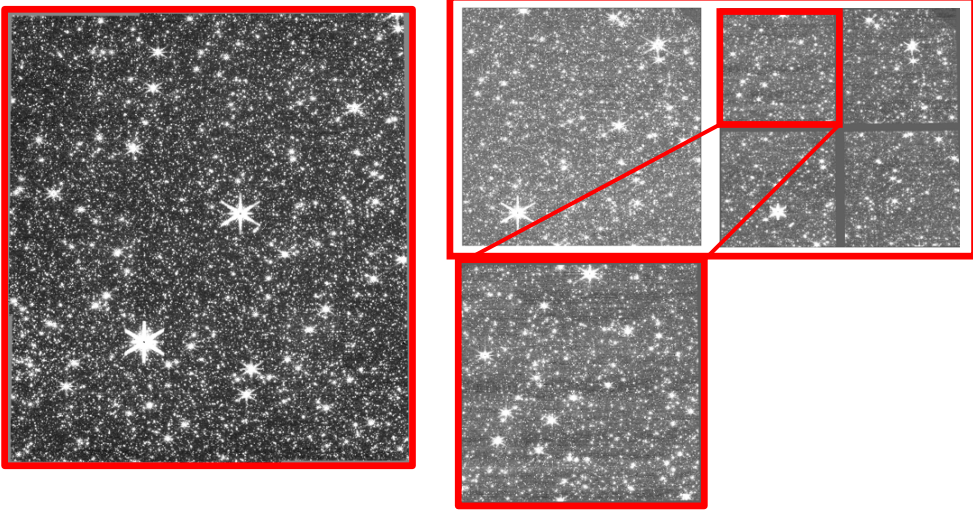


Simulation tools: MIRAGE, PyNRC, Guitarra

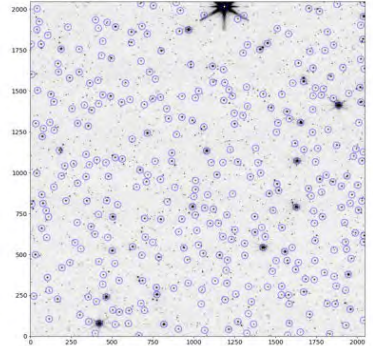
APT file + input catalog



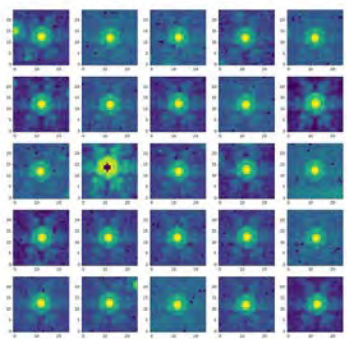
MIRAGE: simulated raw images



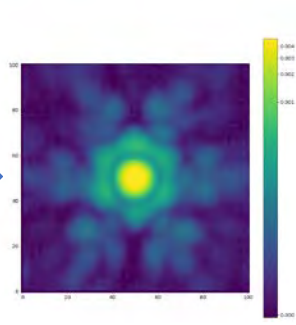
Source finder



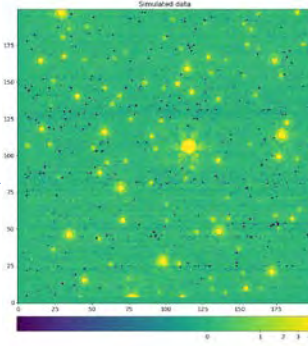
PSF analysis



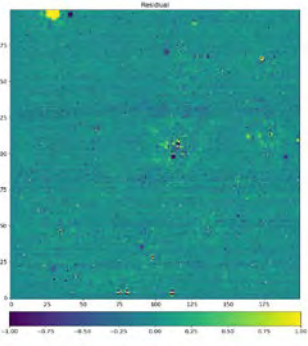
PSF model



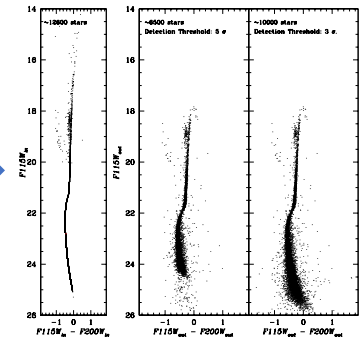
Photometry

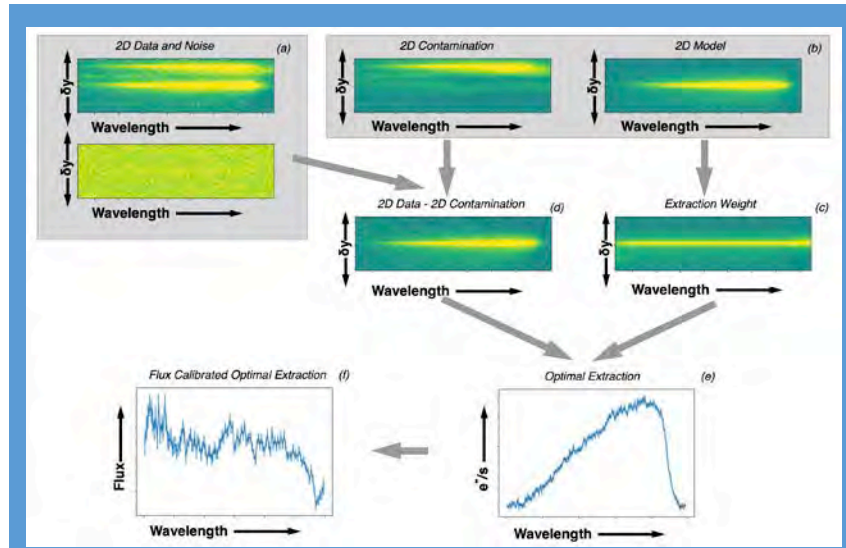
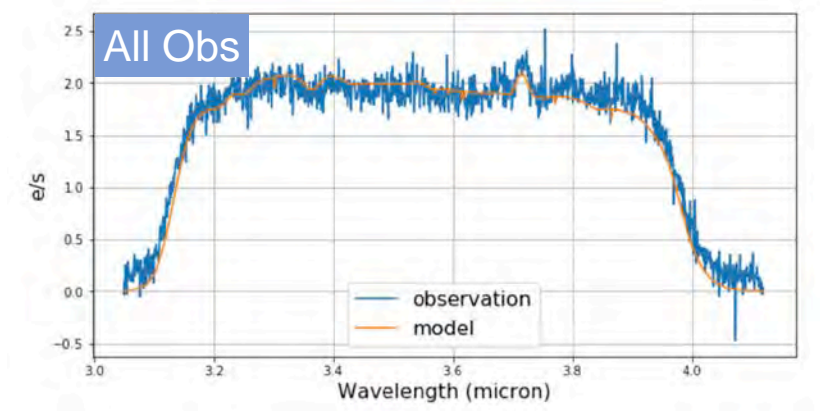
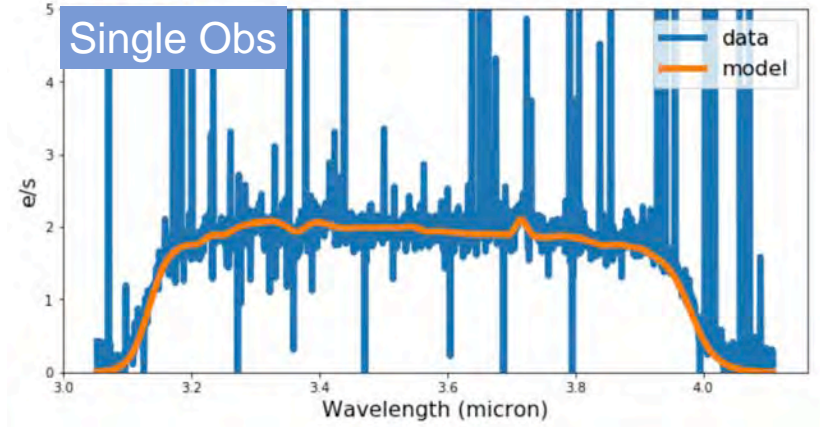
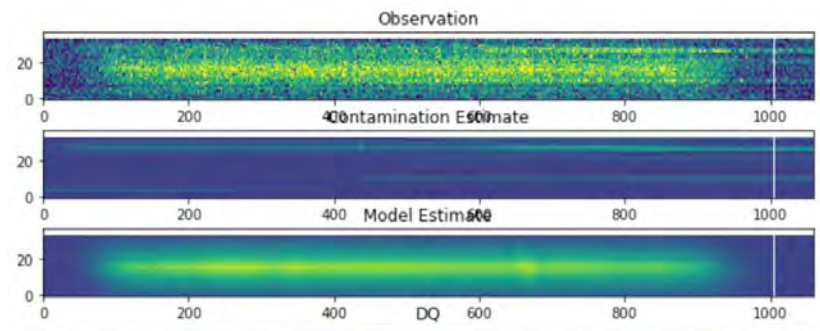
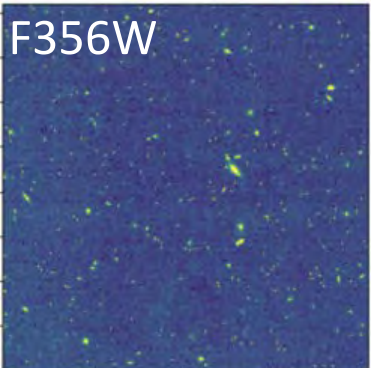
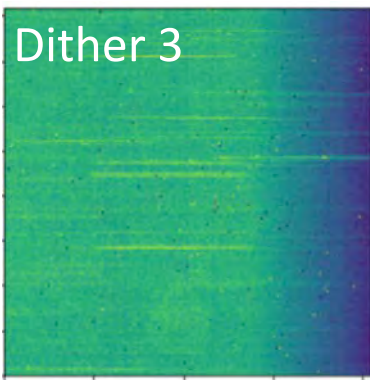
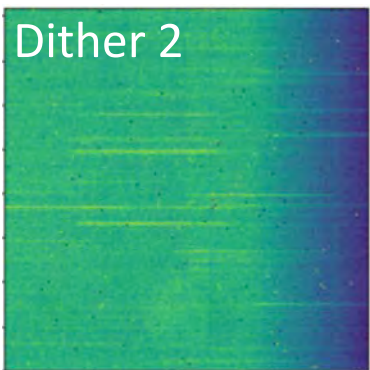
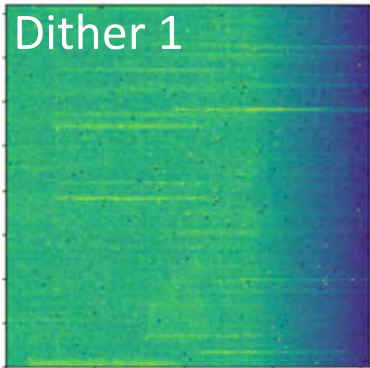


Error analysis

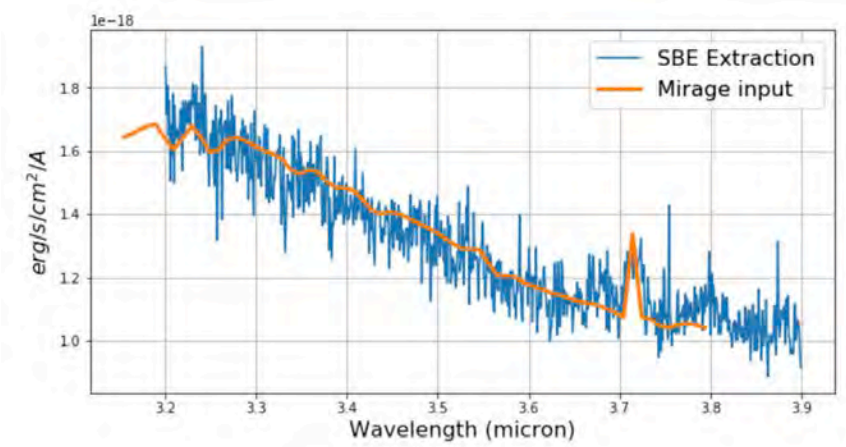


Products





Method: see Pirzkal+17 for details





Developments

- TSO

Enable grism-C for better background subtraction, mitigating against $1/f$ noise that affects grism-R observations (Nikolov)

- Coronagraphy

Develop parallel SW/LW coronagraphy mode. Define requirements e.g. relations between prime and secondary apertures (Gennaro)

- WFSS

Improve modeling of off-field contamination for spectral extraction in the WFSS pipeline (Pirzkal)

- Other studies for future cycles

- scanning subarrays for very bright extended object
- Read-Reset-Read for TSOs to increase duty cycle and better quality data on bright sources
- High-precision timing for TSOs

Ancillary Slides



NIRCam IDT Console Team

(they will become familiar faces during commissioning)



Marcia Rieke
Principal Investigator



Doug Kelly
System Engineer



Karl Misselt
Staff Scientist, Pipeline
Development, ASICs



**Christopher
Willmer**
Associate Astronomer,
deep imaging



Eiichi Egami
Astronomer, widefield
slitless grisms



Tom Beatty
Assistant Astronomer,
exoplanet transits

NIRCam Post-Docs



Jarron Leisenring
Star Formation,
Exoplanets, ASICs,
coronagraphy



Christina Williams
Galaxy evolution,
(especially $z \sim 1-3$)



Kevin Heinline
High-z galaxies,
AGN



**Everett
Schlawin**
Exoplanets,
calibration



Tom Greene
Exoplanets, star
formation, grisms



Tom Roellig
Brown dwarf,
cool stars

NASA Ames Scientists

NIRCam IDT Data Analysis support team (no console)



Charity Woodrum
U. Arizona
Imaging



Raphael Hviding
U. Arizona
Imaging



Ryan Endsley
U. Arizona
Imaging



Ben Johnson
CfA
Photometry



Marie Ygouf
Caltech/IPAC
Coronagraphy



Chas Beichman
Caltech/IPAC
Coronagraphy

SUMMARY

Both IDT and AURA will support commissioning and participate in data analysis

- 10 IDT scientists @ Arizona/AMES/CFA
- 8 IDT postdocs/students @ Arizona/AMES
- 5 IDT engineers @ Lockheed/GSFC
- 11 Astronomers/Scientists @ STScI
- 5 Technical staff @ STScI
- 4 Flight operations staff @ STScI

Total of 40 scientists contributing to NIRCam commissioning



Communication and Collaboration Tools

- E-mail
- Jabber
- Slack Channel
 - Non-permanent informations
- Video Services
 - Webex
 - BlueJeans
- Confluence
 - Innerspace (STScI only)
 - Outerspace (communications with IDT-UAz)
- Github
 - SW and Analysis Scripts
- JIRA
 - Tickets
- Regular meetings
 - Board Weekly Meeting
 - Team Weekly Meeting
 - INS Weekly Meeting (Management)
 - WMO Weekly Meeting
 - Monthly IDT+IST telecons
 - Weekly CAR/CAP telecons