

Gemini Observatory 2021 Virtual Science Meeting

Event Schedule

Mon, Aug 23, 2021

11:00am

Speaker Prep & Testing

🕒 11:00am - 11:30am, Aug 23

11:30am

Welcome/Logistics

🕒 11:30am - 11:40am, Aug 23

🗣️ Speakers



Janice Lee Gemini Observatory / NSF's NOIRLab



Staff Gemini Observatory / NSF's NOIRLab

11:40am

State of the Observatory

🕒 11:40am - 12:00pm, Aug 23

🗣️ Speaker



Jennifer Lotz Gemini Observatory (Arizona) / NSF's NOIRLab

12:00pm

Current Instruments + Upgrades Overview

🕒 12:00pm - 12:20pm, Aug 23

🗣️ Speaker



Ruben Diaz Gemini Observatory / NSF's NOIRLab

12:20pm

Science: Brown dwarfs; circumstellar disks

🕒 12:20pm - 12:45pm, Aug 23

The identification of the least massive brown dwarfs in star-forming regions is important for a variety of reasons. For instance, the shape of the substellar mass function and its minimum mass can provide fundamental tests of theories of star formation. Over several years, we have used ground- and space-based imaging to identify planetary-mass brown dwarfs (<15 Jupiter masses) in the nearest star-forming regions and young associations, and we have used Gemini/GNIRS spectroscopy to confirm their youth and cool nature. We present a summary of the results from this work, which includes the discovery of some of the least massive brown dwarfs found to date (~5 Jupiter masses).

🗣️ **Speaker**



Kevin Luhman Penn State University

12:45pm

Break

🕒 12:45pm - 12:55pm, Aug 23

12:55pm

Current/Future Inst: IGRINS, IGRINS2

🕒 12:55pm - 1:15pm, Aug 23

🗣️ **Speaker**



Gregory Mace University of Texas at Austin

1:15pm

Current/Future Inst: MaroonX

🕒 1:15pm - 1:35pm, Aug 23

🗣️ **Speaker**



Jacob Bean Associate Professor, University of Chicago

1:35pm

Science: Exoplanet Direct Imaging

🕒 1:35pm - 1:55pm, Aug 23

The Gemini Planet Imager Exoplanet Survey (GPIES) has observed 521 young, nearby stars, making it one of

the largest, deepest direct imaging surveys for giant planets ever conducted. With detections of six planets and four brown dwarfs, including the new discoveries of 51 Eridani b and HR 2562 B, GPIES also has a significantly higher planet detection rate than any published imaging survey. Our analysis of the uniform sample of the first 300 stars reveals new properties of giant planets (>2 MJup) from 3-100 AU. We find at >3 sigma confidence that these planets are more common around high-mass stars (>1.5 solar masses) than lower-mass stars. We also present evidence that giant planets and brown dwarfs obey different mass functions and semi-major axis distributions. Our direct imaging data imply that the giant planet occurrence rate declines with semi-major axis beyond 10 AU, a trend opposite to that found by radial velocity surveys inside of 10 AU; taken together, the giant planet occurrence rate appears to peak at 3-10 AU. All of these trends point to wide-separation giant planets forming by core/pebble accretion, and brown dwarfs forming by gravitational instability.

 Speaker



Eric Nielsen New Mexico State University

1:55pm

Current/Future Inst: GPI2

🕒 1:55pm - 2:20pm, Aug 23

 Speaker



Quinn Konopacky University of California San Diego

2:20pm

Chat Sessions: J. Bean, Q. Konopacky, K. Luhman, G. Mace, P. McCarthy, E. Nielsen, G. Sivo

🕒 2:20pm - 2:50pm, Aug 23

Sign up here to reserve your slot to chat with vGSM speakers:

<https://docs.google.com/spreadsheets/d/1YI6AbHzTl6xtpfglEmIQcd0dpglhawmG0xHxcScLM/edit#gid=160822668>

Speakers hosting chats during this time slot:

Jacob Bean

Quinn Konopacky

Kevin Luhman

Gregory Mace

Pat McCarthy

Eric Nielsen

Gaetano Sivo

2:50pm

MOS Mask Making Workshop

🕒 2:50pm - 3:50pm, Aug 23

🗣️ Speakers



Rodrigo Carrasco Associate Astronomer, Gemini Observatory / NSF's NOIRLab



Ricardo Salinas Gemini Observatory / NSF's NOIRLab

3:50pm

End Day 1

🕒 3:50pm - 3:50pm, Aug 23

Tue, Aug 24, 2021

11:30am

Chat Sessions: J. Lotz, K. Luhman, E. Nielsen, R. Salinas, R. Carrasco, M. Schwamb, K. Webb

🕒 11:30am - 12:00pm, Aug 24

Sign up here to reserve your slot to chat with vGSM speakers:

<https://docs.google.com/spreadsheets/d/1YI6AbHzTl6xtpfglEmIQcd0dpglhawmG0xHxcScLM/edit#gid=1195620431>

Speakers hosting chats during this time slot:

Jennifer Lotz

Kevin Luhman

Eric Nielsen

Ricardo Salinas

Rodrigo Carrasco

Meg Schwamb

Kristi Webb

Speaker Prep & Testing

🕒 11:30am - 12:00pm, Aug 24

12:00pm

Gem in We: Workplace Inclusivity

🕒 12:00pm - 1:00pm, Aug 24

Want to help create a more inclusive environment at your workplace? Come to this workshop to evaluate where your organization currently stands in terms of diversity, equity, and inclusion, and learn about some concrete actions you can take to achieve this goal.

🗣️ Speakers



Alysha Shugart Vera C. Rubin Observatory / NSF's NOIRLab



Jocelyn Ferrara Gemini Observatory / NSF's NOIRLab

1:00pm

Break

🕒 1:00pm - 1:10pm, Aug 24

1:10pm

Daily Announcements

🕒 1:10pm - 1:15pm, Aug 24

🗣️ Speakers



Janice Lee Gemini Observatory / NSF's NOIRLab



Staff Gemini Observatory / NSF's NOIRLab

1:15pm

Proposal Modes Overview

🕒 1:15pm - 1:35pm, Aug 24

🗣️ Speaker



Sandy Leggett Gemini Observatory (Hawai'i) / NSF's NOIRLab

1:35pm

Future Inst Overview

🕒 1:35pm - 1:55pm, Aug 24

I will give a brief update of the new instruments and capabilities coming to the Gemini telescopes.

🗣️ Speaker



Scot Kleinman Gemini Observatory / NSF's NOIRLab

1:55pm

Science: GOGREEN; Galaxy Evolution Cluster/Field

🕒 1:55pm - 2:20pm, Aug 24

Galaxies in dense clusters experience additional quenching processes compared to the secular processes which affect field galaxies. The timescale of the quenching processes can be used to constrain the physical mechanisms which suppress star formation. With the Gemini Observation of Galaxies in Rich Early Environments (GOGREEN) survey, we have collected a sample of ~300 spectra of quiescent galaxies (two-thirds of which are in clusters) at $1 < z < 1.5$ -- when the star formation rate was twice as high as it is today. We explore the differences of the populations, as a function of both environment and mass, through modelling their star formation histories. We confirm that in general there is mass-dependent evolution, and add to this picture that galaxies in the field have overall longer star forming time scales and are younger (at fixed mass) by ~0.3 Gyr. We try to explain this age difference through two scenarios, i) galaxies in clusters formed earlier or ii) galaxies in clusters experience environmental quenching post-infall, and find that neither are sufficient (without preprocessing) in simultaneously predicting the observed age difference and quenched fractions. This is distinctly different from local clusters, for which quenching of recently accreted field galaxies plays an important role, particularly at low stellar masses. Our results suggest that quenched population in galaxy clusters at $z > 1$ has been driven by different physical processes than those at $z = 0$.

🗣️ Speaker



Kristi Webb University of Waterloo

2:20pm

Science: Black Holes

🕒 2:20pm - 2:45pm, Aug 24

AGN feedback is widely accepted as a necessary mechanism to regulate the growth of massive galaxies via quenching or suppressing star formation. However, direct evidence is rare, and the overall impact of AGN feedback on galaxy evolution remains controversial. Searching for observational signatures of feedback, we have investigated the connection between AGN activity and star formation, using a large sample of low- z AGNs, by focusing on gas outflows as a channel of feedback. As follow-up studies we examined spatially-resolved gas kinematics and photoionization for a sizable sample of 80 AGNs. Based on these studies, we will highlight the main results: First, we find that strong outflow AGNs and SF galaxies have comparable star formation rate (SFR), while no-outflow AGNs show much lower SFR. This trend suggests that there is no feedback or feedback is delayed. Second, IFU studies revealed that ionized gas outflows are rather confined in a relatively small scale, suggesting a limited impact of AGN feedback. On the other hand, star formation or shock signatures are typically detected at the edge of outflows, implying that negative and positive feedback co-exists for given objects. These results indicate no evidence of instantaneous feedback and the overall impact of outflows is rather limited in low- z galaxies.

🗣️ Speaker



Jong-Hak Woo Seoul National University

2:45pm

Chat Sessions: R. Diaz, J. Ferrara, K. Labrie, S. Leggett, P. McCarthy, R. Riffel, K. Webb, J. Woo

🕒 2:45pm - 3:15pm, Aug 24

Sign up here to reserve your slot to chat with vGSM speakers:

<https://docs.google.com/spreadsheets/d/1YI6AbHzTl6xtpfglEmIQcd0dpghzawmG0xHxcScLM/edit#gid=1195620431>

Speakers hosting chats during this time slot:

Ruben Diaz

Jocelyn Ferrara

Kathleen Labrie

Sandy Leggett

Pat McCarthy

Rogemar A. Riffel

Kristi Webb

Jong-Hak Woo

3:15pm

End Day 2

🕒 3:15pm - 3:15pm, Aug 24

Wed, Aug 25, 2021

11:30am

Chat Sessions: J. Bean, Q. Konopacky, J. Lotz, G. Mace, R. Salinas, R. Carrasco, M. Schwamb, A. Shugart, N. Troja

🕒 11:30am - 12:00pm, Aug 25

Sign up here to reserve your slot to chat with vGSM speakers:

<https://docs.google.com/spreadsheets/d/1YI6AbHzTl6xtpfglEmIQcd0dpghzawmG0xHxcScLM/edit#gid=1836170918>

Speakers hosting chats during this time slot:

Jacob Bean

Quinn Konopacky

Jennifer Lotz

Gregory Mace

Ricardo Salinas

Rodrigo Carrasco

Meg Schwamb

Alysha Shugart

Nora Troja

Speaker Prep & Testing

🕒 11:30am - 12:00pm, Aug 25

12:00pm

Daily Announcements

🕒 12:00pm - 12:05pm, Aug 25

🗣️ Speakers



Janice Lee Gemini Observatory / NSF's NOIRLab



Staff Gemini Observatory / NSF's NOIRLab

12:05pm

Science: AGN & feedback

🕒 12:05pm - 12:30pm, Aug 25

Identifying and characterizing the processes that transform galaxies from star-forming to quiescent is a fundamental goal of extragalactic astronomy.

One critical transformation mechanism is galactic-scale feedback due to active nuclei (AGN). AGN winds are hardly resolved by observations of distant galaxies, where the bulk of galaxy/supermassive black hole growth occurs, but they can be resolved in nearby active galaxies. Our group has been studying the AGN feeding and feedback processes over 15 years, using optical and near-infrared integral field spectroscopy of inner kiloparsec of nearby active galaxies obtained with Gemini telescopes. These observations are used to spatially resolve the molecular and ionized gas emission structure and kinematics. We find that while outflows in ionized gas are seen in most objects studied, in molecular gas they are quite rare, which usually is dominated by rotation in the disk of galaxies and shows inflows in some cases. The observed ionized outflows are not powerful enough to effectively quench star formation in the AGN host galaxies in most cases. Recent results will be presented, exploring the role of shocks in gas excitation and properties of inflows and outflows in a sample of about 30 galaxies.

🗣️ Speaker



Rogemar Riffel UFSM

12:30pm

Future Inst: GHOST

🕒 12:30pm - 12:50pm, Aug 25

🗣️ Speaker



Alan McConnachie NRC Herzberg

12:50pm

Future Inst: SCORPIO

🕒 12:50pm - 1:10pm, Aug 25

🗣️ Speaker



Massimo Robberto Observatory Scientist, JWST/NIRCAM Team Lead, Space Telescope Science Institute

1:10pm

DRAGONS: Project Status and Direction

🕒 1:10pm - 1:30pm, Aug 25

DRAGONS is Gemini's new data reduction platform. The publicly released version offers support for imaging data. Future releases will be focused on spectroscopic modes. I will give you an overview of where we are and where we are going, what the next release is going to include and what we have in store for the following ones.

🗣️ Speaker



Kathleen Labrie Gemini Observatory / NSF's NOIRLab

1:30pm

Break

🕒 1:30pm - 1:40pm, Aug 25

1:40pm

Future of AO: GNAO

🕒 1:40pm - 2:00pm, Aug 25

🗣️ Speaker



Gaetano Sivo Gemini Observatory / NSF's NOIRLab

2:00pm

Future of AO: GIRMOS

🕒 2:00pm - 2:20pm, Aug 25

🗣️ Speaker



Suresh Sivanandam Associate Professor, University of Toronto

2:20pm

Future of AO: GLAO Feasibility Study

🕒 2:20pm - 2:40pm, Aug 25

🗣️ Speaker



Paul Hirst Gemini Observatory (Hawaii) / NSF's NOIRLab

2:40pm

Chat Sessions: P. Hirst, S. Kleinman, S. Leggett, A. McConnachie, M. Robberto, S. Sivanandam, G. Sivo

🕒 2:40pm - 3:10pm, Aug 25

Sign up here to reserve your slot to chat with vGSM speakers:

<https://docs.google.com/spreadsheets/d/1YI6AbHzTl6xtpfglEmIQcd0dpglhawmG0xHxcScLM/edit#gid=1836170918>

Speakers hosting chats during this time slot:

Paul Hirst

Scot Kleinman

Sandy Leggett

Alan McConnachie

Massimo Robberto

Suresh Sivanandam

Gaetano Sivo

3:10pm

ToO Workshop

🕒 3:10pm - 4:10pm, Aug 25

In the target-of-opportunity (ToO) workshop we will review Gemini ToO policies and the triggering process. We will go over some useful resources such as web pages and software libraries. We will work through examples of programmatic triggering that participants can try on their own. Finally, we will preview the improvements to ToO capabilities that will be coming with the Gemini Program Platform (GPP).

🗣️ Speaker



Bryan Miller Gemini Observatory / NSF's NOIRLab

4:10pm

End Day 3

🕒 4:10pm - 4:10pm, Aug 25

Thu, Aug 26, 2021

11:30am

Chat Sessions: R. Diaz, P. Hirst, B. Miller, M. Robberto, A. Shugart, S. Sivanandam, M. Soraisam

🕒 11:30am - 12:00pm, Aug 26

Sign up here to reserve your slot to chat with vGSM speakers:

<https://docs.google.com/spreadsheets/d/1YI6AbHzTl6xtpfglEmIQcd0dpghzawmG0xHxcScLM/edit#gid=2039235958>

Speakers hosting chats during this time slot:

Ruben Diaz

Paul Hirst

Bryan Miller

Massimo Robberto

Alysha Shugart

Suresh Sivanandam

Monika Soraisam

Speaker Prep & Testing

🕒 11:30am - 12:00pm, Aug 26

12:00pm

Daily Announcements

🕒 12:00pm - 12:05pm, Aug 26

🗣️ **Speakers**



Janice Lee Gemini Observatory / NSF's NOIRLab



Staff Gemini Observatory / NSF's NOIRLab

12:05pm

Science: Solar System Small Bodies

🕒 12:05pm - 12:30pm, Aug 26

The fast and flexible nature of Gemini Observatory combined with its unique types of observing programs make it an ideal facility to study the small body reservoirs across the Solar System. In this talk, I will present recent work characterizing the Earth's second mini-moon, highlight results from the Colours of the Outer Solar System Origins Survey (Col-OSSOS) Large and Long Program, and look to the future with how Gemini will be a crucial follow-up facility when the Rubin Observatory is discovering and monitoring over 5 million Solar System objects.

Mini-moons are near Earth asteroids temporarily captured in orbit around Earth. Due their close proximity

to the Earth, these objects probe the asteroid belt on scales much smaller than can be observed directly within the belt today. Mini-moons are observable for a limited time; rapid follow-up is crucial to characterize mini-moons before they escape Earth's orbit. The second mini-moon (2020 CD3) was discovered last year and followed up with GMOS-N photometry.

The Colours of the Outer Solar System Origins Survey (Col-OSSOS) probes the surface properties within the Kuiper belt primarily through near simultaneous *g,r* and *J* colors with the Gemini North. The survey targeted KBOs brighter than 23.6 *r'* mag found by the Outer Solar System Origins Survey (OSSOS). With Col-OSSOS, we have a sample of ~90 KBO colors measured for a set of objects detected in a brightness limited survey, with a well-measured detection efficiency. This affords the opportunity to explore the true frequency of surface colors within the Kuiper belt in order to probe the primordial planetesimal disk and examine the imprint of Neptune's migration history on the present-day Kuiper belt.

 Speaker



Meg Schwamb Queen's University Belfast

12:30pm

Science: GRBs, NS Mergers, GW

🕒 12:30pm - 12:55pm, Aug 26

Kilonovae are a new class of astrophysical transients powered by the radioactive decay of heavy nuclei, freshly synthesized after the collision (or merger) of two neutron stars.

The most remarkable example is the kilonova AT2017gfo which followed the gravitational wave (GW) transient GW170817 and the short duration gamma-ray burst GRB170817A.

A few more candidate kilonovae were found in association with nearby short GRBs. In this talk I will review the current status of the search for kilonovae and discuss new constraints from recent follow-up observations of GW sources and GRBs.

 Speaker



Nora Troja University of Maryland, College Park

12:55pm

Future of Time Domain Astronomy at Gemini

🕒 12:55pm - 1:15pm, Aug 26

 Speaker



Monika Soraisam NCSA/University of Illinois Urbana-Champaign

1:15pm

Preparing for TDA at Gemini: AEON, TOMs, GPP

🕒 1:15pm - 1:35pm, Aug 26

🗣️ Speaker



Bryan Miller Gemini Observatory / NSF's NOIRLab

1:35pm

NOIRLab & Gemini in the 2020s

🕒 1:35pm - 1:55pm, Aug 26

🗣️ Speaker



Pat McCarthy NSF's NOIRLab

1:55pm

Panel Discussion - Gemini in the 2020s, Astro2020, LRP2020

🕒 1:55pm - 2:20pm, Aug 26

🗣️ Speaker



Tbd Gemini Observatory / NSF's NOIRLab

2:20pm

Chat Sessions: S. Kleinman, B. Miller, R. Riffel, M. Soraisam, N. Troja, J. Woo

🕒 2:20pm - 2:50pm, Aug 26

Sign up here to reserve your slot to chat with vGSM speakers:

<https://docs.google.com/spreadsheets/d/1YI6AbHzTl6xtpfglEmIQcd0dpglhawmG0xHxcScLM/edit#gid=2039235958>

Speakers hosting chats during this time slot:

Scot Kleinman

Bryan Miller

Rogemar A. Riffel

Monika Soraisam

Nora Troja

Jong-Hak Woo

2:50pm

Data Reduction with DRAGONS Workshop

🕒 2:50pm - 3:50pm, Aug 26

The DRAGONS workshop will teach the participants how to use and customize their usage of DRAGONS. We will focus on the command-line interface. The participants will be able to run the commands themselves and will be given some simple exercises throughout the class to solidify the learning. To fully participate, the attendees should install the software before the workshop.

Get the workshop material [here](#). Set up instructions in [Learning Objectives](#).

🗣️ Speaker



Kathleen Labrie Gemini Observatory / NSF's NOIRLab

3:50pm

End Day 4

🕒 3:50pm - 3:50pm, Aug 26