

EXOPLANETS

ATMOSPHERES TO ARCHITECTURES

NINTH ANNUAL
GIANT MAGELLAN TELESCOPE COMMUNITY SCIENCE MEETING
SEPTEMBER 6 - 8, 2023  WASHINGTON D.C.



GIANT MAGELLAN TELESCOPE
THE UNIVERSE AWAITS

Scientific Organizing Committee

Rebecca Bernstein

GMTO/Carnegie Observatories

Jayne Birkby

University of Oxford

Sagi Ben-Ami

Weizmann Institute of Science

Fred Ciesla

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Myeong-Gu Park

Kyungpook National University

Emily Rauscher

University of Michigan

Evgenya Shkolnik

Arizona State University

Joshua Winn

Princeton University

George Zhou

University of Southern Queensland

Welcome to the Ninth Annual Giant Magellan Telescope Community Science Meeting

With thousands of new worlds now confirmed, exoplanet science is poised to address long-standing questions: How do planets form and evolve? How diverse are their physical and chemical properties? How does our solar system compare to other planetary systems? How common are Earth-like planets?

This meeting will bring together observers, theorists, and instrumentalists to share the latest results and plans for future research and facilities that will be needed to answer these questions. Some of the topics we will focus on will include:

- ★ Formation, evolution, and architectures of exoplanet systems
- ★ Demographics of exoplanets and systems
- ★ Exoplanet atmospheres and interiors
- ★ Astrobiology and biosignatures
- ★ The roles and unique contributions of ELTs and space observatories and their complementarity

CONFERENCE SUPPORT

Karla Russell (626) 429-9445

PROGRAM CONTENTS

Meeting Info / Map.....	3
Agenda.....	5–9
Poster Presentations	10–11

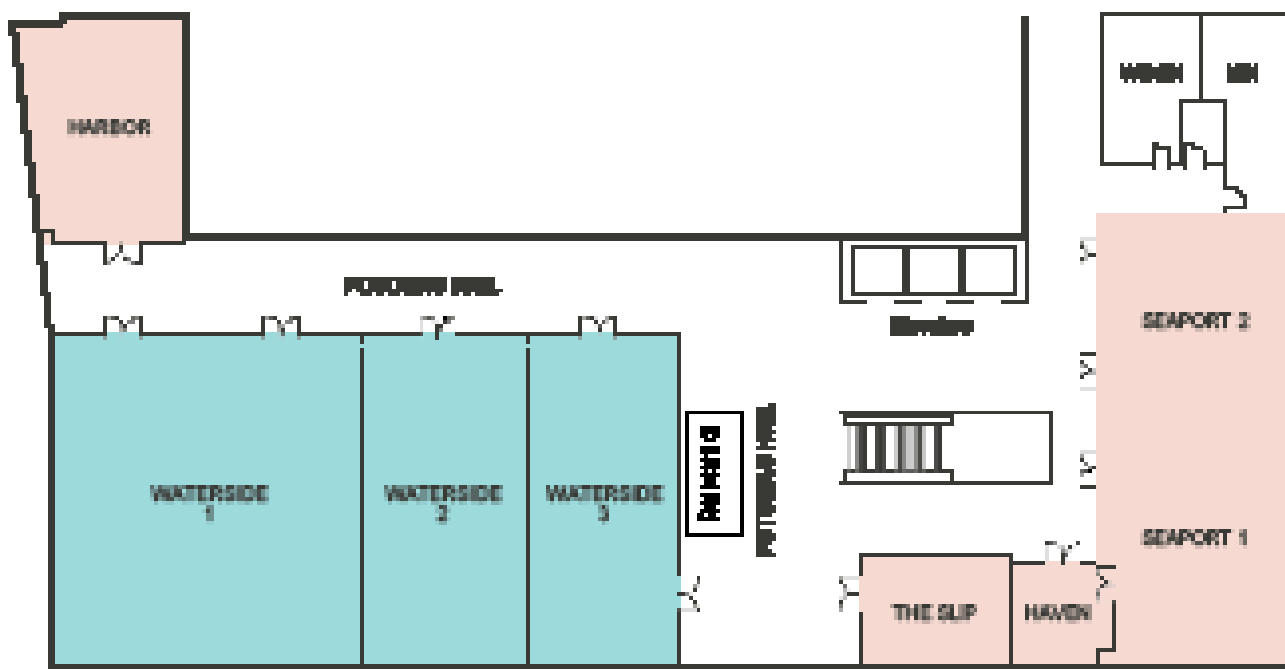
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GMTO Corporation

GENERAL INFORMATION

- ★ Presentations will be in the **Waterside Conference Room(s)**
- ★ Lunch will be provided
- ★ Snacks, coffee, and tea will be available during the meeting
- ★ Photos taken at the meeting will be available at conference.gmto.org/gallery

SPEAKER INFORMATION

- ★ Please provide your talk via Dropbox. Upload links were provided to all speakers (and poster presenters) via email. If necessary, you can provide your talk or poster pop slide at the meeting via our USB stick. Please provide your talk no later than the break prior to your session. You will not be able to project from your personal laptop.
- ★ Files can be in PowerPoint, Keynote, or PDF format. Please transfer or embed any video files.



2nd floor meeting rooms

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ATMOSPHERES TO ARCHITECTURES

SOCIAL MEDIA KIT

Promote your attendance at the Ninth Annual Giant Magellan Telescope Community Science Meeting by sharing information on your social media channels. We've created social media friendly graphics to use and written some posts to help get you started. Feel free to grab the posts and adjust them to best fit your communication style on social media.

Tips for Making the Most of the Social Media Toolkit

- ★ Follow us on [Twitter](#), [Instagram](#), [LinkedIn](#), and [Facebook](#) for updates and announcements, and tag us in your posts
- ★ Use hashtags [#GiantMagellan2023](#) and [#Exoplanets](#).

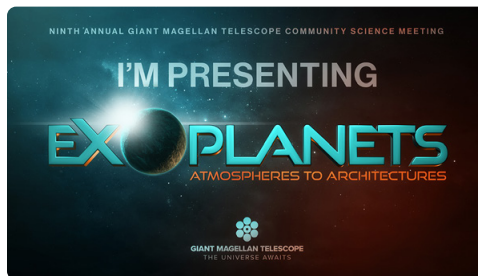
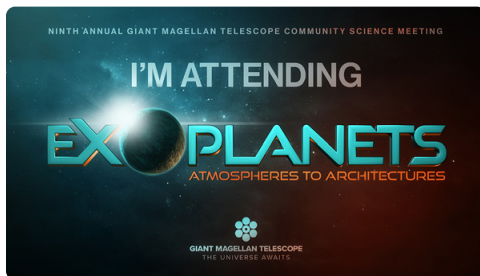
Engagement Contest

The most engaged post between Tuesday, September 5th and Friday, September 8th will receive a chunk of glass from the Giant Magellan Telescope's 6th primary mirror segment! Winner will receive details via direct message to claim their prize.



Images

Visit our [Gallery](#) to download these images to use on social media.



Suggested Copy for Participants

I'm speaking at the [#GiantMagellan2023](#) Community Science Meeting on [#exoplanets](#). I'm excited to be presenting on [presentation topic/title].

I'm happy to be at the [#GiantMagellan2023](#) Community Science Meeting in Washington, DC. Joining my colleagues to share the latest results and plans for future [#exoplanet](#) research.

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ATMOSPHERES TO ARCHITECTURES

2023.09.05

TUESDAY

6:00 – 9:00 pm

Welcome Reception

Drinks & Hors d'oeuvres

2023.09.06

WEDNESDAY

7:30 – 8:50 am

Breakfast

8:50 – 9:00 am

Welcome & Announcements

9:00 – 9:30 am

Rebecca Bernstein

Overview & Update on the Giant Magellan Telescope

SESSION 1

FORMATION & EVOLUTION 1

9:30 – 10:00 am

Jane Huang

Insights into planet formation from protoplanetary disk observations

10:00 – 10:20 am

Dana Anderson

Surveying Protoplanetary Disk Gas Compositions with the ALMA Disk-Exoplanet C/Onnection (DECO) Large Program

10:20 – 10:50 am

Coffee Break

SESSION 2

FORMATION & EVOLUTION 2

10:50 – 11:20 am

Diana Powell

Recent developments and future directions in planet formation theory

11:20 – 11:40 am

Yifan Zhou

Directly Imaging Protoplanets: the HALPHA Survey and Beyond

11:40 – 12:00 pm

Zhoujian Zhang

Elemental abundance of Directly Imaged Exoplanets and Their Host Stars: Fossil Record of Planet Formation Pathways

12:00 – 12:20 pm

Yao Tang

A Reassessment of Core-Powered Mass Loss in the Context of Early Boil-Off for Sub-Neptunes

12:20 – 1:20 pm

Lunch

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SESSION 3 POPULATIONS & ARCHITECTURE 1

- 1:20 – 1:50 pm **Gijs Mulders**
Recent developments and future directions in our knowledge of planet populations and architectures from observations
- 1:50 – 2:10 pm **Emily Pass**
Low-Mass M Dwarfs Lack Jupiter Analogs
- 2:10 – 2:30 pm **Kyle Franson**
Astrometric Accelerations as Dynamical Beacons: Imaging Planets Around Young Accelerating Stars
- 2:30 – 2:50 pm **Morgan Sidel**
TOI-1259 A b: A Gas Giant's Origin Story Revealed in Metastable Helium, and Prospects for GMT/NIRS Helium Spectroscopy
- 2:50 - 3:10 pm **Poster Pops 1 (see page 10)**
- 3:10 - 3:40 pm **Coffee Break**

SESSION 4 POPULATIONS & ARCHITECTURE 2

- 3:40 - 4:10 pm **Eve Lee**
Planet Populations and Architectures Around Myriad Stars
- 4:10 - 4:30 pm **Ava Morrissey**
Probing Atmospheric Escape in the 100 Myr-Old Sub-Neptune HIP94235b: Observational Insights from HST and VLT
- 4:30 - 4:50 pm **Jacob Bean**
Comparative atmospheric planetology in the JWST era
- 4:50 - 5:10 pm **Johanna Teske**
The First Population Survey of Small Planet Atmospheres
- 5:10 - 5:30 pm **Poster Pops 1 (see page 11)**
- 6:00 pm **Conference Dinner**

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ATMOSPHERES TO ARCHITECTURES

2023.09.07

THURSDAY

7:30 – 9:00 am

Breakfast

SESSION 5

ATMOSPHERES 1

9:00 – 9:30 am

Megan Mansfield

Observations of Exoplanet Atmospheres, from the Ground and from Space

9:30 – 10:00 am

Jared Males

The plans and promise of GMagAO-X

10:00 – 10:20 am

Stefan Pelletier

Refractory-to-volatile abundance ratios on the ultra-hot Jupiter WASP-121b measured from CRIRES+ and ESPRESSO

10:20 – 10:50 am

Coffee Break

SESSION 6

ATMOSPHERES 2

10:50 – 11:20 am

Luis Welbanks

Assessing the chemical inventory of exoplanet atmospheres over the next two decades

11:20 – 11:40 am

Peter Smith

Stronger Together: Using Synergies Between Ground-Based Telescopes and JWST to Understand Exoplanet Atmospheres

11:40 – 12:00 pm

Michael Plummer

Charting Extrasolar Storms: Mapping Exoplanetary Atmospheric Features with Extremely Large Telescopes

12:00 – 12:20 pm

Laura Flagg

Data-Driven Telluric Correction in the Infrared in the GMT Era

12:20 – 12:30 pm

Community Science Meeting Group Photo

12:30 – 1:50 pm

Lunch

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ATMOSPHERES TO ARCHITECTURES

SESSION 7 INTERIORS

- 1:50 – 2:20 pm **Leslie Rogers**
Recent developments and future directions in characterizing/interpreting planet interiors
- 2:20 – 2:40 pm **Lujendra Ojha**
On the likely prevalence of ocean-worlds in M-dwarf systems
- 2:40 – 3:00 pm **Sang-Heon Dan Shim**
Endogenic Water from Hydrogen-Magma Reaction in Sub-Neptunes — Implications for Atmospheric Composition, Internal Structure, and Demographics
- 3:00 – 3:20 pm **Olivia Lim**
JWST Reconnaissance Transmission Spectroscopy of the Earth-Sized Exoplanets TRAPPIST-1 b and g
- 3:20 – 3:50 pm **Coffee Break**

SESSION 8 INTERDISCIPLINARY

- 3:50 – 4:20 pm **Victoria Meadows**
Recent developments and future directions in characterization/interpretation of exoplanet habitability
- 4:20 – 4:40 pm **Kevin Hardegge-Ullman**
O₂ transits with ELTs
- 4:40 – 5:00 pm **Sophia Vaughan**
Searching for the reflected light of Proxima b
- 5:00 – 5:20 pm **Yeon Joo Lee**
Long-term monitoring plan of Venus for studying cloudy terrestrial exoplanets
- 6:00 pm **Conference Dinner**

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2023.09.08

FRIDAY

7:00 – 9:00 am

Breakfast

SESSION 9

FUTURE 1

9:00 – 9:30 am

Courtney Dressing

Opportunities and Open Questions

9:30 – 10:20 am

Breakout discussion groups

10:20 – 10:50 am

Coffee Break

SESSION 10

FUTURE 2

10:50 – 11:20 am

Daniel Apai

A Look Forward

11:20 – 12:10 pm

Breakout discussion groups

12:10 – 12:20 pm

Wrap-up

Luminous Merger Between Two Star-forming Galaxies 1.7 Billion Years After the Big Bang

12:20 pm

Lunch (box lunches provided)

WORKSHOP ON SCIENCE COMMUNICATION AND MEDIA ENGAGEMENT

1:00 – 4:00 pm

Workshop (Sponsored by Giant Magellan Telescope & AAAS)

POSTER POPS PART 1

Mariona Badenas-Agusti

Cecilia: A Machine Learning Pipeline for Measuring Metal Abundances in Polluted White Dwarfs

Lauren Biddle

Deep PaBeta Imaging of the Candidate Accreting Protoplanet AB Aur b

Alan Boss

Population Synthesis Models for Gas Giant Exoplanets Formed by Gas Disk Gravitational Instability Around M Dwarfs

John Chambers

A Simple Model for Planet Formation Driven by Observations

YeonHo Choi

Introduction of Instrument Development for Transiting Exoplanets in South Korea

Ellen Costa-Almeida

Abundances of Bioessential Elements on Solar-type Stars Using High Resolution Spectra

Zoe de Beurs

A Pathway to Finding Earth-twins With GMT

Alison Duck

Reanalyzing KELT-15b: An Exploration of Systematic Errors in Transiting Planets and Their Host Stars

Juan Ignacio Espinoza Retamal

The Aligned Orbit of the Eccentric Proto Hot Jupiter TOI-3362b

Eric Gaidos

Extremely Hot Planets with Extremely Large Telescopes

Claire Geneser

Navigating Stellar Activity of Young and Active Stars To Validate TESS Planets Around K Dwarfs

Ana Glidden

Can Carbon Fractionation Provide Evidence for Aerial Biospheres in the Atmospheres of Temperate Sub-Neptunes?

Sam Gruhblatt

An Unlikely Survivor: A Low-density, Hot Neptune Orbiting a Red Giant Star

Sebastiaan Haffert

Visible Light Integral-field Spectroscopy With GMT: Unveiling the Birth of Stars and Planets

Antonio Hales

ALMA Studies of Young Planet-forming Stars

Adam Yassin Jaziri

ARES VI: Are 1D Retrieval Models Accurate Enough To Characterize Exo-atmospheres With Transmission Spectroscopy in the Context of JWST and Ariel?

Sydney Jenkins

Constraining White Dwarf Pollution Mechanisms With the GMT

Sam Factor

HST Kernel-phase Interferometry: Binary Demographics of Brown Dwarfs from Birth to Maturity

Sai Krishna Teja Kanumalla

IGRINS Observations of the Enigmatic WASP-127b: Abundance Constraints on Water and Carbon-monoxide

Maggie Kautz

The High Contrast Adaptive-optics Testbed for Risk Reduction on the Giant Magellan Telescope

Jay Kueny

MagAO Imaging Results for the HD 141569 Disk and Using Next-Generation Large Ground-Based Telescopes to Reveal Pathways to Uncharted Regions

POSTER POPS PART 2

Eden McEwen

Real-time Wavefront Sensor Calibration
for Coronagraphic Imaging

Marvin Morgan

Testing the Origin of Warm Jupiters With
Population-Level Eccentricities

Sagnick Mukherjee

Constraints on Atmospheric Vertical Mixing
in Giant Exoplanets and Brown Dwarfs

Laura Neves Ribeiro do Amaral

The Contribution of M-dwarf Flares to the Thermal
Escape of Potentially Habitable Planet Atmospheres

Logan Pearce

Exoplanet Science in Reflected Light with GMagAO-X

Tyler Richey-Yowell

Searching for Exoplanet IR Aurorae

Romy Rodriguez Martinez

A Comparison of the Composition of Planets in Single-
and Multi-planet Systems Orbiting M Dwarfs

Margarita Safonova

Making Habitable Worlds: Megastructures
vs Habitable Planets

Sabina Sagynbayeva

Accretion Onto Circumplanetary Disks

Arjun Savel

Peering Into the Black Box: Forward-modeling the
Uncertainty Budget of High-resolution Spectroscopy
Of Exoplanet Atmospheres

Kevin Schlaufman

Kepler-discovered Multiple-planet Systems
Near Period Ratios Suggestive of Mean-motion
Resonances Are Young

Ethan Schreyer

Using Lyman-alpha Transits to Constrain
Models of Atmospheric Escape

Jack Schulte

The Migration and Evolution of Eccentric
Planets (MEEP) Survey

Rob Sharp

GMT Integral Field Spectrograph

Yahel Sofer Rimalt

G-CLEF @ Magellan: Front-End Optical Design

Patrick Tamburo

Planets Transiting Mid-to-Late M Dwarfs from the Nancy
Grace Roman Space Telescope

Javier Viana

A Neural Network Based Search for Earth Analogs
In Kepler Data

Shreyas Vissapragada

GMT Can Constrain D/H for Transiting Exoplanets
Via Atomic Spectroscopy

Noah Vowell

HIP 33609 b: A Highly Eccentric Transiting Brown
Dwarf Orbiting a B-star

Jingxuan Yang

2D Temperature Parameterisation in Atmospheric
Retrievals of Hot Jupiter Phase Curves With Application
to WASP-43b

Sol Yun

Impacts of Existence of Planets on Chemical Properties
of Their Host Stars

Ya Lin Wu

Marshall Johnson

Laird Close