



2020 NHFP Fellows Symposium

September 21-25, 2020 “virtually anywhere”

Science Talks: 10+5 min

All times listed in the Eastern U. S. time zone. Program starts promptly at 12:00 pm each day.

Monday, September 21

12:00 *Welcome and Introduction from NHFP Leads*, Andy Fruchter, Dawn Gelino, Paul Green

12:15 *Welcome from the Space Telescope Science Institute* – Ken Sembach, Director (STScI)

12:30 *Perspective from NASA Astrophysics* - Paul Hertz (Astrophysics Division Director, NASA HQ)

Compact Objects

12:45 *Quantum Neutrino Transport in Supernovae and Neutron-star Mergers* – Luke Johns (UC Berkeley)

1:00 *Cosmic Ray Diffusion in Magnetized Turbulence* – Siyao Xu (IAS)

1:15 *Development of extreme two-temperature plasmas by radiative relativistic turbulence* – Vladimir Zhdankin (Princeton)

1:30 *The Gravitational Wave Universe Through the Lens* - Jose María Ezquiaga (U. of Chicago)

1:45 *Tidal Disruption Events: Multi-messenger Probes of Outflows and Accretion in Supermassive Black Holes* – Kate Alexander (Northwestern)

2:00 *Break*

Stars

2:30 *Cosmic Ray Feedback with Diffusion Suppression in Star-forming Regions* - Vadim Semenov (Harvard)

2:45 *Variability and Asteroseismology of Massive Stars* – John Chisholm (UC Santa Cruz, UT Austin)

Galaxies

3:00 *Constraints on Dark Matter Substructure Using Low Mass Galaxies Outside the Local Group* – Shany Danieli (IAS, Princeton)

3:15 *Galaxy Metallicities and the Baryon Cycle Over the Past 12 Billion Years* – Ryan Sanders (UC Davis)

3:30 *Quasars in the Epoch of Reionization* – Feige Wang (U. of Arizona)

3:45 *Bridging the Gap Between Galaxy and Star Formation with Star Clusters* – Hui Li (MIT, Columbia)

4:00 *Hitting Rock Bottom: The Foundation of a Converged Model of Galaxy Formation* - Max Gronke (JHU)

4:15 *Adjourn*





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Tuesday, September 22

Exoplanets

- 12:00 *Observational Constraints on Envelope Ionization in Young Protostars* – Kamber Schwarz (U. of Arizona)
- 12:15 *What Creates Spirals in Protoplanetary Disks? The Role of Thermodynamics in the Planetary Interpretation* - Jaehan Bae (Carnegie)
- 12:30 *From Astronomy to Chemistry: Towards a Continuous Path for the Origins of Life* – Zoe Todd (U. of Washington)
- 12:45 *Understanding Super-Earth Formation by Finding Them Around Binaries* – David Martin (Ohio State)
- 1:00 *Becoming Protoplanetary: Disk Formation from the Top-Down* - Aleksandra Kuznetsova (AMNH)
- 1:15 *Discovery and Characterization of Proto-planets with Visible Light Integral-field Spectroscopy* - Sebastiaan Haffert (U. of Arizona)
- 1:30 *Oxygen False Positives on Habitable Zone Planets Around Sun-like Stars* – Joshua Krissansen-Totton (UC Santa Cruz)
- 1:45 *Stability Constrained Characterization of Multiplanet Systems* – Daniel Tamayo (Princeton)
- 2:00 **Break**

Cosmology

- 2:30 *Counting the Number of Dust Clouds that Make Up the Polarized Emission Acting as a Foreground to the CMB* – Georgia Panopoulou (SAO)
- 2:45 *The Formation and Growth of Supermassive Black Holes at Early Cosmic Epochs* - Anna-Christina Eilers (MIT)
- 3:00 *Making Dark Matter Out of Light* - Katelin Schutz (MIT)
- 3:15 *Cross-correlating High-energy Neutrinos and Tracers of Large-Scale Structure* - Ke Fang (MIT)
- 3:30 *A “Broken” Stream Induced by Dark Matter Subhalo Perturbations?* - Ting Li (Carnegie Obs.)
- 3:45 *Understanding Cosmological Tensions with Type Ia Supernovae in the Local Universe* – David Jones (UC Santa Cruz)
- 4:00 *It’s Dust! The Solution to Two Key Mysteries in Type Ia Supernova Cosmology* – Dillon Brout (U Penn)
- 4:15 *Bridging the Gap between Theory and Data by Leveraging Large Data Sets* – Yuan-Sen Ting (IAS)
- 4:30 **Adjourn**





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Wednesday, September 23

Galaxies

- 12:00 *Integral Field Spectroscopy and Serendipitous Discoveries* – Anna McLeod (UC Berkeley)
- 12:15 *Quasars in the Epoch of Reionization* – Coral Wheeler (Carnegie Obs.)
- 12:30 *Which Attenuation Curve Should We Use?* - Irene Shvaid (U. of Arizona)
- 12:45 *What Can Ly α Emission from Galaxies Tell Us About Reionization?* – Charlotte Mason (SAO)
- 1:00 *Pathways to Self-consistent Modeling of High-redshift Lyman-alpha Emitters* - Aaron Smith (Caltech)
- 1:15 *Ubiquitous Molecular Outflows in $z > 4$ Massive, Dusty Galaxies* - Justin Spilker (UT Austin)
- 1:30 *The Environmental Dependence of First Star Formation* – Anna Schauer (UT Austin)
- 1:45 *The SAGA Survey: Building a Statistical Sample of Satellite Systems around Milky Way-like Galaxies* – Yao-Yuan Mao (Rutgers)
- 2:00 *Break*
- 2:30 Special Session

Special Session: Discussing NHFP Plans Against (Anti-Black) Racism

Chairs:

Aleksandra Kuznetsova -- Chair of Talks

Johanna Teske -- Moderator of Discussion Session

Jane Huang, Yao-Yuan Mao, Gina Panopoulou - Facilitators during Talks

- *Goals and Ground Rules*
- *Mission Statement*
- *Application and Awardee Statistics*
- *Application Evaluation*
- *Mentoring and Outreach*
- *Broader Impacts Fund*
- *Website*
- *Action Plan Evaluation/Accountability*
- *Talks and Open Discussion*

4:30 *Adjourn*





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Thursday, September 24

Stars

- 12:00 *Advances in the Binary Population Synthesis* – Tuguldur Sukbold (Ohio State)
- 12:15 *The Evolution of Red Supergiants to Supernova* – Emma Beasor (NOAO)
- 12:30 *Probing Substellar Magnetospheres with Statistical Studies of Brown Dwarf Quiescent Radio Emission* – Melodie Kao (ASU)

Compact Objects

- 12:45 *Systematic Uncertainty of Standard Sirens from the Viewing Angle of Neutron Star Mergers* – Hsin-Yu Chen (Ohio State)
- 1:00 *Astrophysical Lessons from LIGO/Virgo's Black Holes* - Maya Fishbach (Princeton)
- 1:15 *A Rosetta Stone for FRBs?* - Ben Margalit (UC Berkeley)
- 1:30 *Deciphering the Biography of Massive Stars with Compact Object Mergers* – Michael Zevin (U. of Chicago)
- 1:45 *Shapiro Delay-Enabled Mass Measurements of Two Notable Millisecond Pulsars* – H. Thankful Cromartie (Cornell)
- 2:00 *Break*
- 2:30 *Imaging Black Hole Accretion Flows with Polarization* – Andrew Chael (Princeton)
- 2:45 *Inferring the Recoil Velocity from Black Hole Mergers* - Maximiliano Isi (MIT)
- 3:00 *The NICER View of the Ultra-compact X-ray Binary 4U 1543-624* - Renee Ludlam (Caltech)
- 3:15 *Stars Stripped in Binaries: from Cosmic Reionization to Gravitational Waves* – Ylva Gotberg (Carnegie Obs.)
- 3:30 ***Special Session on NHFP Benefits and Policies*** with Pat Knezek (NASA), Paula Sessa (STScI), and Shantavia Sturgis (STScI)
- 4:30 *Adjourn*





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Friday, September 25

Exoplanets

- 12:00 *All Downhill from Here: What Automatic Differentiation can Do for Exoplanet Science* – Benjamin Pope (NYU)
- 12:15 *TESSting Subgiant Physics* – Jamie Tayar (U. of Hawaii)
- 12:30 *Simultaneous Wavefront Sensing and Coronagraphy with the Phase-apodized-pupil Lyot Coronagraph* – Emiel Por (UC Boulder)
- 12:45 *Towards Understanding Clouds and Hazes in Exoplanet and Brown Dwarf Atmospheres* – Peter Gao (UC Santa Cruz)
- 1:00 *Observing Spiral Structures in Protoplanetary Disks* – Jane Huang (U. of Michigan)
- 1:15 *The Connection Between Ultracool Dwarf Planet Hosts and Surface Gravity* – Chris Theissen (UC San Diego)
- 1:30 *Formation of Ultra-Short-Period Planets by Obliquity-Driven Tidal Runaway* – Sarah Millholland (Princeton)
- 1:45 *Imaging the Habitable Zones of Nearby Stars* – Kevin Wagner (U. of Arizona)
- 2:00 *Phosphorus Carriers in the Solar-type Protostar B1-a* – Jennifer Bergner (U. of Chicago)
- 2:15 **Break**
- 2:45 **Open Mic** ending by 4:30

