



## 2025 56th Annual DDA Meeting Schedule

### 2025 56th Annual Meeting of the DDA

Altanta, Georgia, USA

#### Oral Presentations

All times are local time (EDT, UTC-4)

Full abstracts can be found [here](#) [1].

Plan your talks for 12m+3 (for questions). Invited talks are 15m+3m.

Remote talks are 7+3m

\* 2025 Duncombe award

\*\* Invited talk

For talks and posters tips, please see [here](#) [2], including on how to upload posters.

#### Sunday, May 18th

##### Opening Reception

Venue: [Student Success Center](#) [3].

6:00 – 8:00

#### Monday, May 19th

##### Introduction and Announcements

Gongjie Li, Toshi Hirabayashi, Smadar Naoz  
SOC, LOC, and DDA Chairs

9:00 – 9:15

##### Planets: from birth to death

Chair: Matija Cuk  
Slack Chair: Shaunak Modak

9:15 – 10:30

|       |                      |   |
|-------|----------------------|---|
| 9:15  | Nader Haghighipour   | An Advanced Approach to the Formation and Composition of Terrestrial Planets      |
| 9:30  | Tim Hallatt          | Shedding Light on Desert Dwellers   |
| 9:45  | Alexander Stephan    | The Death Spiral of Doomed Worlds: Orbital Evolution of Planets Engulfed by Stars |
| 10:00 | Christopher O'Connor | Polluting Sun-like stars with tidally decaying ultra-short-period planets         |
| 10:15 | Gongjie Li           | Heating and Migration of Ultra-Short Period Planets due to Magnetic Interactions  |

##### Coffee Break

10:30 – 11:00

##### Exoplanet Resonant dynamics

Chair: Dan Fabrycky  
Slack Chair: Arcelia Hermosillo Ruiz

11:00 – 12:00

|       |                |  |
|-------|----------------|--|
| 11:00 | Joseph Livesey | Gap Complexity Amplification in Peas-in-a-pod Exoplanetary Systems With Outer Giant Companions       |
| 11:15 | Grant Weldon   | The Stellar Eccentric Kozai-Lidov Mechanism as a Key Driver of Cold Jupiter Eccentricities           |
| 11:30 | Elio Thadhani  | SPOCK 2.0: Physically motivated classifiers for the long-term stability of compact planetary systems |



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## Catered Lunch at Exhibition Hall

11:45 – 1:00

### Asteroids & Impacts

Chair: Maryann Benny Fernandes

Slack Chair: Kaustub Anand

1:00 – 2:15

|      |   |   |
|------|---|---|
| 1:00 | Stanley Dermott (presented by<br>Apostolos Christou ) | Random walk transport of small<br>asteroids from the Main Belt to the<br>inner solar system |
| 1:15 | Apostolos Christou                                    | New asteroid families among the<br>Martian Trojans  |
| 1:30 | Rachel Cueva*   | Semiseccular Nodal Resonances within<br>Binary Near-Earth Asteroid Dynamical<br>Evolution   |
| 1:45 | Jose Daniel Castro*                                   | Lunar fragments impacting Earth   |
| 2:00 | Rogério Deienno                                       | Chondrite Parent Bodies as Escaped<br>Satellites of Proto-Planetary Embryos                 |

### Coffee Break

2:15 – 2:45

### Exoplanet Evolving Architectures

Chair: Alexander Stephan

Slack Chair: Michael Poon

2:55 – 4:00

|      |                          |   |
|------|--------------------------|---|
| 2:55 | Sarah Millholland (zoom) | Exploring Hot Jupiter Formation via<br>Chaotic Tidal Migration  |
| 3:05 | Darin Ragozzine (zoom)   | Exoplanetary Dynamical<br>Demographics from the New<br>Photodynamical Kepler Multis<br>Dynamical Catalog          |
| 3:15 | Eritas Yang              | A second M dwarf companion to the<br>retrograde hot Jupiter HAT-P-7b: new<br>dynamical implications for formation |
| 3:30 | Gabriel Teixeira Guimar  | Orbital instabilities in compact<br>planetary systems   |
| 3:45 | Rixin Li                 | The Resonant Remains of Broken<br>Chains from Major and Minor Mergers   |

### Coffee Break

4:00 – 4:10

### Early Career Activities

led by JJ Zanazzi and Santiago Torres

4:10 – 5:10

## Tuesday, May 20th

### Brouwer Prize Lecture: Dong Lai

#### Dynamical Formation of Merging Compact Binaries (a Planetary Dynamics Talk Disguised as a BH Talk)

Chair: Smadar Naoz

Slack Chair: Gongjie Li

9:00 – 10:00

### Exoplanet: Dynamical Theory and Numerical tools

Chair: Jiaru Li

Slack Chair: Gongjie Li

10:00 – 10:30

|       |                 |  |
|-------|-----------------|--|
| 10:00 | Elizabeth Jones | Cancelling effects of conjunctions<br>make higher order mean motion<br>resonances weak       |
| 10:15 | Jiapeng Gao     | How to bake puffy planets - Coupling<br>radius inflation with high eccentricity<br>migration |

### Coffee Break

10:30 – 11:00

### Black holes and their natural habitats

Chair: Elena Maria Rossi

Slack Chair: Tiger Lu

11:00 – 12:03

|       |                  |  |
|-------|------------------|--|
| 11:00 | Claire Ye**      | Black Hole and Neutron Star Dynamics<br>in Dense Star Clusters                               |
| 11:18 | Zeyuan Xuan*     | Probing Dynamically Formed Black<br>Hole Binaries in Galactic Globular<br>Clusters with LISA |
| 11:33 | Elizabeth Bailey | Stable disks around black holes: A<br>potential barrier to MACHO<br>microlensing detection   |
| 11:48 | Nabanita Das     | A Stellar Dynamical Mass for the<br>Central Black Hole in MCG-06-30-15                       |



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## Catered Lunch at Exhibition Hall

12:03 – 1:00

### Special Session: Exploring the Origins and Evolution of Stellar Obliquities

Chair: Michelle Vick

Slack Chair: Grant Weldon

1:00 – 2:30

|      |                         |  |
|------|-------------------------|--|
| 1:00 | Simon Albrecht**        | Review of patterns emerging from stellar obliquity studies   |
| 1:18 | Malena Rice**           | The Impact of Binary Companions on the Stellar Obliquity Distribution  |
| 1:36 | Cristobal Petrovich**   | On the origins of spin-orbit misalignments   |
| 1:54 | John Zanazzi**          | Hot Jupiters, Obliquity Damping, and Resonance Locking   |
| 2:12 | Hareesh Gautham Bhaskar | Secularly-driven high-eccentricity migration predicts an anti-correlation between period and stellar obliquity |
| 2:27 | Songhu Wang             | From Misaligned Hot Jupiters to Aligned Warm Jupiters: New Implications from Stellar Obliquity Studies         |

## Coffee Break

2:42 – 3:15

## Poster Session

3:15 – 4:15

### Dynamical theory and tools

Chair: Hareesh Bhaskar

Slack Chair: Nabanita Das

4:15 – 5:00

|      |                    |  |
|------|--------------------|--|
| 4:15 | Tjarda Boekholt    | A direct N-body integrator for modelling the chaotic, tidal dynamics of multibody extrasolar systems: TIDYMESS |
| 4:30 | David Hernandez    | The existence of a perturbed Hamiltonian in simulations of planetary systems                                   |
| 4:45 | Aaron J. Rosengren | Secular and mean-motion resonances beyond the Laplace radius in the Earth-Moon system                          |

## Wednesday, May 21th

### Signposts in the Galaxy

Chair: Nathaniel Starkman

Slack Chair: Mithi De Los Reyes

9:00 – 10:15

|       |                      |   |
|-------|----------------------|---|
| 9:00  | Raymond Carlberg**   | Sub-halo heating of stellar streams   |
| 9:30  | Thomas Donlon        | A Real-Time Portrait of the Milky Way in Direct Acceleration Measurements                             |
| 9:45  | Elena Maria Rossi    | Dynamical phenomena in galactic nuclei: learning from modelling the innermost 100 pc of our Galaxy    |
| 10:00 | Biancamaria Sersante | Dynamics of recaptures, ejections and mergers of stellar binaries over multiple encounters with SgrA* |

## Coffee Break

10:15 – 11:00

### Exoplanets: Architecture, Habitable or Hostile

Chair: Aaron J. Rosengren

Slack Chair: Sabina Sagynbayeva

11:00 – 12:00

|       |                 |  |
|-------|-----------------|--|
| 11:00 | Richard Zeebe   | No influence of passing stars on paleoclimate reconstructions over the past 56 million years         |
| 11:15 | Juliette Becker | Water Retention on Habitable Exoplanets Orbiting White Dwarfs  |
| 11:30 | William DeRocco | Free-floating planets in the era of Roman  |
| 11:45 | Tiger Lu*       | Planets are not Points: The Profound Effect of Planetary Structure on Exoplanet System Architectures |

## Catered Lunch at Exhibition Hall

12:00 – 1:00

### Special Session: The 20th anniversary of Cassini's arrival at Saturn

Chair: Matt Hedman

Slack Chair: Leonardo O. Espinoza Zepeda

1:00 – 2:18



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|  |                         |   |
|--|-------------------------|---|
| 1:00   | Christopher Mankovich** | Rings as Tracers of Planetary Oscillations: from Saturn to Uranus   |
| 1:18   | Naoya Torii             | Global N-body Simulations of Gap Edge Structures Created by Perturbations from a Small Satellite Embedded in Saturn's Rings |
| 1:33   | Joseph Hahn             | N-body simulations of the Self-Confinement of Viscous Self-Gravitating Narrow Eccentric Planetary Ringlets                  |
| 1:48   | Victor Afigbo           | Revisiting Bending Waves in Saturn's Rings: A Hidden Battle in the Geometry of the Rings                                    |
| 2:03   | Philip Nicholson        | Ripples in the C ring: echoes of the 1983 impact?   |
| <b>Coffee Break</b><br>2:18 - 2:45   |                         |   |
| <b>From Jupiter to the Oort Cloud</b><br>Chair: Maryame El Moutamid<br>Slack Chair: Brian Cook<br>2:45 - 3:45  |                         |   |
| 2:45   | Ian Brunton             | On the early dynamical evolution of Jupiter's inner moons   |
| 3:00   | Rosemary Pike           | DO: Discovery of a 10:1 Resonator with a Novel Libration State  |
| 3:15   | Antranik Sefilian       | Secular Inclination Dynamics of Massive Planetesimal Disks in Planetary Systems   |
| 3:30   | Luke Dones              | A Spiral Structure in the Inner Oort Cloud  |
| <b>Coffee Break</b><br>3:45 - 4:00   |                         |   |
| <b>DDA Business Meeting</b><br>All DDA Meeting attendees are welcome and encouraged to attend!<br>Only DDA members will be able to vote. DDA officers will give reports, and future meetings and activities of the AAS Division on Dynamical Astronomy (DDA) will be discussed.<br>4:00 - 5:00 |                         |   |
| <b>DDA Banquet</b><br>Venue: <a href="#">Georgia Tech Hotel &amp; Conference Center</a> [4]<br><br>800 Spring St NW, Atlanta, GA 30308 <a href="#">(404) 347-9440</a> [5]<br><br>7:00 - 9:00   |                         |   |

## Thursday, May 22th

|  |                    |   |
|--|--------------------|---|
| <b>Galactic Disks: Structure &amp; Dynamics</b><br>Chair: Thomas Donlon<br>Slack Chair: Christopher O'Connor<br>9:00 - 10:33 |                    |   |
| 9:00   | Chris Hamilton**   | Nonlinear phase space dynamics and the Gaia Snail(s)  |
| 9:18   | Shaunak Modak      | ISM-Induced Orbital Heating and Migration   |
| 9:33   | Sihao Cheng        | A novel view and new sharp structures in the phase space of Milky Way disk  |
| 9:48   | Aayusha Singh      | Formation and Evolution of Galactic Bars: Examining the Influence of Angular Momentum Transfer in Spiral Galaxies         |
| 10:03  | Mithi De Los Reyes | Stellar and Gas Kinematics in Void Dwarf Galaxies   |
| 10:18  | Cora Schallock     | GOFHER - Which side is closer? Automatically disambiguating the tilt of disk galaxies by measuring differential reddening |
| <b>Coffee Break</b><br>10:33 - 11:00   |                    |   |
| <b>Dynamics of TNOs</b><br>Chair: Sihao Cheng<br>Slack Chair: Denvir Higgins<br>11:00 - 11:45                                |                    |   |
| 11:00  | Sihao Cheng        | Announcement: Discovery of a Large TNO on an Extremely Wide Orbit   |
| 11:05  | Yukun Huang (zoom) | Retrograde TNOs from Binary Disruptions by Neptune  |
| 11:15  | Ra Machado (zoom)  | On the cohesion of the TNO Arrokoth   |



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|   |                         |   |
|---|-------------------------|---|
|   |                         | across different density ranges   |
| 11:25   | Kathryn Volk (zoom)     | Detailed Dynamical Classification of TNOs with Machine Learning   |
| 11:35   | Renu Malhotra (zoom)    | The doubly librating Plutinos   |
| <b>Catered Lunch at Exhibition Hall</b><br>11:45 – 1:00   |                         |   |
| <b>Rings and Satellites</b><br>Chair: Apostolos Christou<br>Slack Chair: Rachel Cueva                                   |                         |   |
| 1:00 – 2:15   |                         |   |
| 1:00  | Augustus Hahn           | Are there signatures of planetary normal modes in the Uranian rings?  |
| 1:15  | Teng Ee Yap             | Callisto's Non-Resonant Orbit as a Reflection of Circum-Jovian Disk Structure   |
| 1:30  | Kaustub Anand           | The sesquinary catastrophe of Deimos reconciles its excited past with its cooler present.                                     |
| 1:45  | Carl Murray             | New analysis of the discovery plate of Jupiter VIII, Pasiphae, and a validity check for Gaia                                  |
| 2:00  | Michael Poon            | A potential exomoon from the predicted planet obliquity of beta Pictoris b  |
| <b>Coffee Break</b><br>2:15 – 2:45  |                         |   |
| <b>Galactic Cores: Collisions, Captures, and Catapults</b><br>Chair: Yubo Su<br>Slack Chair: Janosz Dewberry            |                         |   |
| 2:45 – 3:45   |                         |   |
| 2:45  | Mark Dodici             | Stellar binaries orbiting supermassive black holes should often shrink to near-contact separations                            |
| 3:00  | Brian Cook              | Modeling Tidal Debris Production from Globular Cluster Progenitors with a New Monte Carlo N-body code                         |
| 3:15  | Sanaea Rose             | Stellar Bumper Cars: On the Orbital Effects of Stellar Collisions in Galactic Nuclei  |
| <b>Coffee Break</b><br>3:30 – 4:00  |                         |   |
| <b>Mentoring Activities</b><br>4:00 – 5:00  |                         |   |
| <b>Public talk</b><br><b>Nader Haghighipour</b><br><b>Do Tatroonies exist and can they be habitable?</b><br>7:00 – 8:00 |                         |   |
| <b>Friday, May 23th</b>   |                         |   |
| <b>Exoplanet Disks</b><br>Chair: JJ Zanazzi<br>Slack Chair: Meng Sun  |                         |   |
| 9:00 – 10:30  |                         |   |
| 9:00  | Agustin Heron           | Unraveling the asymmetric accumulation of material at co-orbital Lagrange points  |
| 9:15  | Jiaru Li                | Evolution and Breaking Conditions of Warped Disks: A Systematic Investigation with a Simple Yet Physically Motivated Approach |
| 9:30  | Sudat Khan              | Migrational Dynamics of Massive Planet Pairs Embedded within Locally Isothermal Protoplanetary Disks                          |
| 9:45  | Arcelia Hermosillo Ruiz | Nbody Simulations of an Inclined, Eccentric Planet and Exterior Debris Disk Show Asymmetric Structure Similar to AU Mic       |
| 10:00   | Marc Friebe             | Formation of Gaps in Self-Gravitating Debris Disks: Secular Resonances in a Two-Planet System                                 |
| 10:15   | Sabina Sagynbayeva      | Circumplanetary Disks are Rare around Planets at Large Orbital Radii  |
| <b>Coffee Break</b><br>10:30 – 11:00  |                         |   |
| <b>Stellar Situationships</b><br>Chair: Sanaea Rose<br>Slack Chair: Mark Dodici   |                         |   |
| 11:00 – 12:15   |                         |   |



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|       |                   |  |
|-------|-------------------|--|
| 11:00 | Cheyenne Shariat* | The Role of Triples on Accreting Binary Populations: A Combined Observational and Dynamical Approach |
| 11:15 | Yubo Su           | Strong Differential Rotation in a 2.7-day Stellar Binary Due to Spin-Orbit Resonance                 |
| 11:30 | Janosz Dewberry   | Testing tidal theory using Gaia binaries   |
| 11:45 | Meng Sun          | Tidal Physics and the Open-Source Code GYRE-tides  |
| 12:00 | Aleksey Generozov | Low mass binaries are bound from birth   |

**12:45 - End of Meeting and goodbyes**

## Poster Presentations

### Available Monday - Thursday

|                             |   |
|-----------------------------|---|
| Christopher O'Connor        | Probing white dwarf kick physics with eccentric binaries and exoplanets   |
| Nathaniel Starkman          | A Zooniverse of Stellar Streams: First Look at Dark Matter Halos in Euclid  |
| Wayne Hayes                 | SpArcFiRe: correlating visible structure of spiral galaxies with photometric and spectral data  |
| Kimia Yazdani               | Automated Detection of Co-Rotation Radii Using Color Gradients  |
| Matthew Hedman              | Resonantly Driven Patterns in the Uranian rings observed by JWST  |
| Ian Matheson                | The forced orbit plane of the Hilda asteroids   |
| Maryann Benny Fernandes     | Measuring the Distances to Asteroids from One Observatory in One Night with Upcoming All-Sky Telescopes                                 |
| Maryame El Moutamid         | Dynamical History of the Uranian Moon Miranda   |
| Daniel Fabrycky             | Deploying an Artificial Planetary Torus to Shade Earth  |
| Rainer Marquardt-Demen      | Capture of Interstellar Objects   |
| Michelle Vick               | Tidal Heating and Hot Jupiter Formation   |
| Kaitlyn Lane                | A Detailed Model of Planetary Engulfment by Main Sequence Stars: Evolution of the Planetary Orbit and Observable Stellar Signatures     |
| Nathaniel Tanglin           | Simulated Effects of Radiogenic Elements on Planetary Magnetic Fields and Habitability  |
| Joan Gimeno                 | Advancing the Detection and Stability Analysis of Habitable Exoplanetary Systems  |
| Ritika Sethi                | Misaligned Planets Exhibit Greater Tidally Induced Radius Inflation Compared to Aligned Planets   |
| Matija Cuk                  | A Two-Stage Cataclysm in the Saturnian System   |
| Denvir Higgins              | Exploring cislunar space via big datasets generated on HPC: usefulness of SOMs for orbit prediction and statistics of cislunar families |
| Evgeny Romashets            | Flux Calibration of Magnetic Field in Astrophysics  |
| Richard Hester              | A Simple Model for Solar System Secular Frequencies   |
| Leonardo O. Espinoza Zepeda | Dynamical Stability Insights for Enceladus Exploration  |
| Roi Basha                   | Kozai Lidov Cycles = Simple Pendulum  |
| Evgeny Romashets            | Transformation from spheromak type into toroidal type force free magnetic fields in solar and interplanetary plasmas.                   |
| Louis Carton                | Modeling Lunar Ejecta from Spacecraft Crashes: A Historical Study   |
| Bhanu Kumar                 | Secondary Resonance Overlap Inside Unstable Mean Motion Resonant Orbit  |



Brianna Xin

Dallin Spencer (virtual)

Nikolaos Georgakarakos (virtual)

## Families

Characterization and Prediction of  
Stellar Scintillation Under Variable  
Atmospheric Conditions

Diving DEEP into the Kuiper Belt:  
Dynamical Analysis of Newly  
Discovered TNOs

New results on the stability of  
circumbinary planets

**Source URL:** <https://dda.aas.org/node/179>

## Links

[1] <https://submissions.mirasmart.com/DDA56/Itinerary/EventsAAG.aspx>

[2] <https://dda.aas.org/meetings/2025/presentation-guidelines-and-tips>

[3] <https://ssc.gatech.edu/>

[4] <https://www.gatechhotel.com/>

[5] [https://www.google.com/search?q=georgia+tech+hotel+%26+conference+center&rlz=1C5CHFA\\_enUS932US964&oq=Georgia+Tech+Hotel+%26+Conference+Center&gs\\_lcrp=EgZjaHJvbWUqCggAEAAAY4wIYgAQyCggAEAAAY4wIYgAQyFggBEC4YrwEYxwEYgAQYjgUYmAUYmQUyCAgCEAAAYFhgeMggIAxAAGBYHHjIIICAQQABgWGB4yCAgFEAAAYFhgeMggIBhAAGBYHHjIIICAQABgWGB4yCAgIEAAAYFhgeMggICRAAGBYHHtIBBzM3OGowajeoAgCwAgA&sourceid=chrome&ie=UTF-8#](https://www.google.com/search?q=georgia+tech+hotel+%26+conference+center&rlz=1C5CHFA_enUS932US964&oq=Georgia+Tech+Hotel+%26+Conference+Center&gs_lcrp=EgZjaHJvbWUqCggAEAAAY4wIYgAQyCggAEAAAY4wIYgAQyFggBEC4YrwEYxwEYgAQYjgUYmAUYmQUyCAgCEAAAYFhgeMggIAxAAGBYHHjIIICAQQABgWGB4yCAgFEAAAYFhgeMggIBhAAGBYHHjIIICAQABgWGB4yCAgIEAAAYFhgeMggICRAAGBYHHtIBBzM3OGowajeoAgCwAgA&sourceid=chrome&ie=UTF-8#)