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

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 Apostolos Christou)	Random walk transport of small asteroids from the Main Belt to the inner solar system
1:15	Apostolos Christou	New asteroid families among the Martian Trojans
1:30	Rachel Cueva*	Semisecular Nodal Resonances within Binary Near-Earth Asteroid Dynamical Evolution
1:45	Jose Daniel Castro*	Lunar fragments impacting Earth
2:00	Rogerio Deienno	Chondrite Parent Bodies as Escaped 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 Chaotic Tidal Migration
3:05	Darin Ragozzine (zoom)	Exoplanetary Dynamical Demographics from the New Photodynamical Kepler Multis Dynamical Catalog
3:15	Eritas Yang	A second M dwarf companion to the retrograde hot Jupiter HAT-P-7b: new dynamical implications for formation
3:30	Gabriel Teixeira Guimar	Orbital instabilities in compact planetary systems
3:45	Rixin Li	The Resonant Remains of Broken 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 make higher order mean motion resonances weak
10:15	Jiapeng Gao	How to bake puffy planets - Coupling radius inflation with high eccentricity 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 in Dense Star Clusters
11:18	Zeyuan Xuan*	Probing Dynamically Formed Black Hole Binaries in Galactic Globular Clusters with LISA
11:33	Elizabeth Bailey	Stable disks around black holes: A potential barrier to MACHO microlensing detection
11:48	Nabanita Das	A Stellar Dynamical Mass for the Central Black Hole in MCG-06-30-15

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

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?

Coffee Break
2:18 – 2:45

From Jupiter to the Oort Cloud
Chair: Maryame El Moutamid
Slack Chair: Brian Cook

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

Coffee Break
3:45 – 4:00

DDA Business Meeting
All DDA Meeting attendees are welcome and encouraged to attend!
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.

4:00 – 5:00

DDA Banquet

Venue: Georgia Tech Hotel & Conference Center [4]

800 Spring St NW, Atlanta, GA 30308 (404) 347-9440 [5]

7:00 - 9:00

Thursday, May 22th

Galactic Disks: Structure & Dynamics
Chair: Thomas Donlon
Slack Chair: Christopher O'Connor

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

Coffee Break

10:33 – 11:00

Dynamics of TNOs
Chair: Sihao Cheng
Slack Chair: Denvir Higgins

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

		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

Catered Lunch at Exhibition Hall
11:45 – 1:00

Rings and Satellites
Chair: Apostolos Christou
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

Coffee Break

2:15 – 2:45

Galactic Cores: Collisions, Captures, and Catapults
Chair: Yubo Su
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

Coffee Break
3:30 – 4:00

Mentoring Activities

4:00 – 5:00

Public talk
Nader Haghighipour
Do Tatooines exist and can they be habitable?
7:00 – 8:00

Friday, May 23th

Exoplanet Disks
Chair: JJ Zanazzi
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

Coffee Break

10:30 - 11:00

Stellar Situationships

Chair: Sanaea Rose
Slack Chair: Mark Dodici

11:00 – 12:15

11:00	Cheyanne 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

	Families
Brianna Xin	Characterization and Prediction of Stellar Scintillation Under Variable Atmospheric Conditions
Dallin Spencer (virtual)	Diving DEEP into the Kuiper Belt: Dynamical Analysis of Newly Discovered TNOs
Nikolaos Georgakarakos (virtual)	New results on the stability of circumbinary planets

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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=EgZjaHJvbWUqCggAEAAY4wIYgAQyCggAEAAY4wIYgAQyFggBEC4YrwEYxwEYgAQYjgUYmAUYmQUyCAgCEAAYFhgeMggIAxAAGBYYHjIICAQQABgWGB4yCAgFEAAYFhgeMggIBhAAGBYYHjIICAcQABgWGB4yCAgIEAAYFhgeMggICRAAGBYYHtIBBzM3OGowajeoAgCwAgA&sourceid=chrome&ie=UTF-8#