



2024 55th Annual DDA Meeting Schedule

2024 55th Annual Meeting of the DDA

Toronto, Ontario, Canada

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

* 2024 Duncombe award

** 2023 Duncombe award

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

Sunday, May 12th

Opening Reception

Venue: [Myhal 150 & Lobby](#) [3], [google map](#) [4]

Myhal Centre,
55 St George St,
Toronto, ON M5S 0C

6:00 - 8:00

Monday, May 13th

Introduction and Announcements

Smadar Naoz, Sam Hadden, Matt Tiscareno
SOC, LOC, and DDA Chairs

8:45 - 9:00

Stellar (and planets) binaries

Chair: Sanaea Rose
Slack Chair: Gene Milone

9:00 - 10:30

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|-------|----------------------|--|
| 9:00 | Fred Adams | Theory for the Formation of Jupiter-Mass Binary Systems |
| 9:15 | Tomer Yavetz | Wide Binaries as Dynamical Probes of the Milky Way's Structure |
| 9:30 | Santiago Torres | The Dynamical Evolution of Planets Orbiting Interacting Binaries |
| 9:45 | Michael Poon | Leaning Sideways: VHS 1256-1257b is a Super-Jupiter with a Uranus-like Obliquity |
| 10:00 | Mor Rozner | Born to Be Wide: The Distribution of Wide Binaries in the Field and Soft Binaries in Clusters |
| 10:15 | Yukun Huang (remote) | JuBMOs Were Formed Tight: Dynamical Evolution of Jupiter Mass-Binary Objects within Stellar Clusters |

Coffee Break

10:25 - 10:50

The outer solar system and interstellar objects

Chair: Santiago Torres
Slack Chair: Gene Milone

10:50 - 12:20

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|-------|-----------------|---|
| 10:50 | Matija Cuk | Orbital Histories of Titan, Hyperion and Iapetus |
| 11:05 | Ian Chow | The Dynamical Origin of Decameter Earth Impactors |
| 11:20 | Matthew Hopkins | Predicting Interstellar Object |



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| 11:35 | Arcelia Hermosillo Ruiz | Chemodynamics with Gaia |
| 11:50 | Scott Tremaine | Forcing Planets to Evolve: How Damping Neptune's Eccentricity can Indirectly Affect the Orbit of Uranus |
| 12:05 | Cole Gregg | Testing MOND on small bodies in the remote solar system |
| Lunch | | |
| 12:20 - 1:50 | | |
| 1:50 | Jackson Barnes | The Development of Interstellar Meteoroid Streams |
| 2:05 | Garett Brown | The Properties of Contact Binaries Formed From Gravitational Collapse |
| 2:20 | Daniel Scheeres | The effects of stellar flybys on the formation and stability of the Solar System |
| Special Session: How Thousands of New Satellites Will Affect the Sky and Astronomy (Each talk = 18m) | | |
| Chair: Matija Cuk Slack Chair: Matt Tiscareno | | |
| 2:35 - 3:32 | | |
| 2:35 | Samantha Lawler | Energy and Angular Momentum Constraints on Collapsing Granular Systems |
| 2:53 | Sarah Greenstreet | Light pollution from satellites: what's coming and what astronomy research will be compromised |
| 2:11 | Hanno Rein | The Impact of Satellite Constellations on Rubin Observatory's Legacy Survey of Space and Time (LSST) |
| 3:29 | Aaron Boley | Visualizing Dynamical Astronomy for Science and Outreach |
| Coffee Break | | |
| 3:47 - 4:10 | | |
| Galactic dynamics, MW and its counterparts | | |
| Chair: Smadar Naoz Slack Chair: Tiger Lu | | |
| 3:55 - 5:40 | | |
| 4:10 | Gustavo Medina Toledo | How astronomers can protect dark and quiet skies |
| 4:25 | Jacob Nibauer | A distribution-function based estimation of the Milky Way mass from outer halo tracers observed by DESI |
| 4:40 | Frank Van Den Bosch | The Linear Response of Tidal Streams to Arbitrary Galactic Substructure with Differentiable Simulations |
| 4:55 | Sam Hadden | Core Instability and its relation to Core Stalling and Dynamical Buoyancy |
| 5:10 | Nathaniel Starkman | Fudge-free actions: action-angle variables in galactic dynamics via Birkhoff normalization |
| 5:25 | short break | |
| 5:30 | IDEA Early discussion , led by JJ Zanazzi and Santiago Torres (in-person), and Rogerio Deienno (online) | |
| Tuesday, May 14th | | |
| Rubin Prize Lecture: Carl Rodriguez The lives, deaths, and black hole dynamics of star clusters Chair: Matthew Tiscareno Slack Chair: Smadar Naoz | | |
| 9:00 - 10:00 | | |
| Coffee Break 10:00 - 10:20 | | |
| Compact object dynamics in star clusters Chair: Gongjie Li Slack Chair: Gene Milone 10:20 - 12:00 | | |
| 10:20 | Fulya Kiroglu | Stream Members Only: Data-Driven Characterization of Stellar Streams with Mixture Density Networks |
| 10:35 | Miguel Angel Martinez | Spinning up Black Holes in Merging Binaries through Stellar Collisions in Young Star Clusters |
| 10:50 | Claire Ye | Retention and Ejection of Intermediate Mass Black Holes from Dense Stellar Environments |
| 11:05 | Zeyuan Xuan (remote) | Where Are Their Companions? Isolated Millisecond Pulsars in Globular Clusters |
| | | Dynamical Formation of Highly |



Eccentric Compact Object Binaries and Their Gravitational Wave Signatures in the Millihertz Band

11:15 Jiaru Li

BH Binary Formation in AGN Disks: Dynamics, Hydrodynamics, and GW Signatures

11:30 Mark Dodici

Using Hill's problem to study binary formation under dynamical friction

Lunch

12:00 - 1:35

Kepler's multits

Chair: Sarah Millholland
Slack Chair: Gene Milone

1:35 - 3:20

1:35 Gongjie Li

Spin and Seasonal Variations for Planets in Compact Systems

1:50 Daniel Fabrycky

Orbital periods in multiple-planet systems: beyond the mission timescale for TTV and mono-transits

2:05 Thea Faridani

Secular Resonances in Exoplanet Systems Are More Likely Than You'd Think

2:20 Caleb Lammers*

The instability mechanism of compact multiplanet systems

2:35 Yubo Su

Long-lived Planetary Obliquities of Close-in Exoplanets: The Tricky Story for Rocky Bodies

2:50 Daniel Jones

Photodynamical Analysis of All Kepler Systems of Multiple Transiting Planets

3:05 Lauren Weiss

The Kepler Giant Planet Search. I. A Decade of Kepler Planet-host Radial Velocities from W. M. Keck Observatory

Coffee Break

3:20 - 3:40

3:40 Jessica (Jingyun) Lin & Ivan Dudiak

Creating Pileups of Eccentric Planet Pairs Wide of MMRs Through Divergent Migration

3:55 Rori Kang

Spacing Uniformity in Multiplanet Systems as a Probe of the Giant Impact Phase of Planet Formation

4:10 Simone R. Hagey

Characterizing the effects of systemic proper motion on long-term exoplanet transit observations

4:25 Eritas (Qing) Yang

Modulating the stability boundary: secular dynamics of compact three-planet systems

4:40 Phoebe Sandhaus

Simulating the Effects of Outer Giant Planets on Inner Super-Earths with In Situ Formation Models

Mass hierarchy and its consequences (probing DM and 4-body system)

Chair: Matt Tiscareno
Slack Chair: Smadar Naoz

4:55 - 5:25

4:55 Man Ho Chan

Constraining dark matter properties by orbital precession around the Galactic supermassive black hole

5:10 Ygal Klein

Librating Kozai-Lidov Cycles with a Precessing Quadrupole Potential are Analytically Approximately Solved

Public talk

Samantha Lawler

Internet for all? The painfully high costs of megaconstellations for astronomy, the atmosphere, and the future of LEO

7:00 - 8:00

Wednesday, May 15th

Dynamics near SMBHs

Chair: Claire Ye
Slack Chair: Yubo Su

9:00 - 10:30

9:00 Smadar Naoz

It's Raining Black Holes...Hallelujah!

9:15 Hanxi Wang (remote)

Statistical Mechanics in the Galactic Center: Anisotropic Mass segregation and Phase Transition

9:25 Sanaea Rose**

Collisional Shaping of Nuclear Star Cluster Density Profiles

9:40 Jane Bright *

The M31 Nucleus: Our Closest Recoiled Black Hole?

9:55 Tatsuya Akiba

Kickin' it with Friends: Evidence of a Past Black Hole Merger in the Galactic Center



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| 10:10 | Denyz Melchor | Tidal disruption events galore, could you want more? On the formation of repeated TDEs |
| Coffee Break 10:25 - 10:50 | | |
| Protoplanetary disks and planet formation Chair: Songhu Wang Slack Chair: Michelle Vick | | |
| 10:50 - 11:50 | | |
| 10:50 | Wenrui Xu | Imprints of pressure-bump planet formation on planetary architectures |
| 11:05 | Marcy Best | How do Giant Planets influence inner Planet Formation? |
| 11:20 | Eonho Chang | Sufficient Criterion for the Rossby Wave Instability: A Hierarchical Approach |
| 11:35 | Jiaqing Bi | Shoulder of Dust Rings Explained by Dust Dynamics Under Planet-Disk Interactions |
| Tides Chair: Matt Tiscareno Slack Chair: Gene Milone | | |
| 11:50 - 12:35 | | |
| 11:50 | Janosz Dewberry | Tidal synchronization trapping in stars and planets with convective envelopes |
| 12:05 | Carolina Charalambous | Tidal effects on extrasolar resonant chains |
| 12:20 | Robert Melikyan | Tidal Dynamics and the Collisional Evolution of Binaries |
| Lunch 12:35 - 2:00 | | |
| Planet's Satellites and Rings Chair: Mor Rozner Slack Chair: Gene Milone | | |
| 2:00 - 3:35 | | |
| 2:00 | Max Goldberg | Chaotic tides as a solution to the Hyperion problem |
| 2:15 | Maryame El Moutamid | The Role of Three-Body Resonances on the Dynamical History of the Saturnian Satellite System |
| 2:30 | Jose Castro (remote) | The Sensitivity to initial conditions of the Orbital Pathways of Lunar Ejecta |
| 2:40 | Raluca Rufu | Evection Resonance in the Earth-Moon system |
| 2:55 | Matthew Hedman | Unexpected structures in Uranus' gamma ring. |
| 3:10 | Alyssa Rhoden (remote) | The evolution of a young ocean within Saturn's moon, Mimas |
| 3:20 | Philip Nicholson | Analysis of bending waves in Saturn's rings |
| Coffee Break 3:35 - 4:00 | | |
| Mentoring from the DEI Lens Sherard Robbins "The Missing Link: Mentorship as The Key to Success " Chair: Smadar Naoz Slack Chair: Matt Tiscareno | | |
| 4:00 - 5:00 | | |
| 5:00 - 5:30 | Mentoring discussion | |
| 5:30 - 6:30 | Mentoring event Pairing mentors | |
| DDA Banquet Venue: Amsterdam Brewhouse on the Lake . [5] | | |
| Amsterdam Brewhouse on the Lake 245 Queens Quay W, Toronto, ON 1-416-504-1020 ext. 315 | | |
| 7:00 - 9:00 | | |

Thursday, May 16th

Brouwer Prize Lecture: Alessandra Celletti
From Infinite to Finite Time Stability in Celestial Mechanics, from Perturbation Theory to Machine Learning Methods
 Chair: Matthew Tiscareno
 Slack Chair: Smadar Naoz
 9:00 - 10:00

Coffee Break
 10:00 - 10:20



White Dwarfs

Chair: Alexander Stephan
Slack Chair: Michelle Vick

10:20 - 10:50

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|-------|-----------------------|--|
| 10:20 | Christopher O'Connor* | The thermal evolution of WD1856b reveals its migration history |
| 10:35 | Dang Pham | Polluting White Dwarf with Oort Cloud Comets |

On the Formation and Dynamical Evolution of Hot Jupiters Session 1

Chair: Malena Rice
Slack Chair: Yubo Su

10:50 - 12:11

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|-------|------------------------|---|
| 10:50 | Eve Lee | Testing disk migration theory with hot and warm Jupiters |
| 11:08 | Cristobal Petrovich | High-eccentricity migration of hot Jupiters |
| 11:26 | Grant Weldon | A semi-analytical model for eccentric Kozai-Lidov migration of Hot Jupiters |
| 11:41 | Yurou Liu | The Formation of Double Hot Jupiter Systems Through ZLK Migration |
| 11:56 | Michelle Vick (remote) | The Spin Evolution of a Gas Giant throughout High-Eccentricity Migration |

Lunch Break

12:06 - 1:40

On the Formation and Dynamical Evolution of Hot Jupiters Session 2

Chair: Gongjie Li
Slack Chair: Yubo Su

1:40 - 3:01

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|------|-------------------|--|
| 1:40 | Malena Rice | The Orbital Architectures and Companion Rates of Hot Jupiter Systems |
| 1:58 | Songhu Wang | Towards a Unified Story of Hot Jupiter Formation |
| 2:16 | John Zanazzi | Damping stellar obliquities by resonance locking |
| 2:31 | Sarah Millholland | Empirical Constraints on Tidal Dissipation in Hot Jupiter Host Stars |
| 2:46 | Alexander Stephan | Dwarfs pushing Giants: Uncovering Hot Jupiter Formation Pathways Obscured by Stellar Evolution and White Dwarf Formation Kicks |

Kuiper Belt / TNOs / Trojan

Chair: Maryame El Moutamid
Slack Chair: Matt Tiscareno

3:01 - 3:46

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|------|-------------------|--|
| 3:01 | Brett Gladman | Primordial Orbital Alignment of Sednoids |
| 3:16 | Sarah Greenstreet | Jupiter's Metastable Companions |
| 3:31 | C. Adeene Denton | Groundhog Day in the Kuiper Belt? How strength can trap KBOs in a collisional loop |

Coffee Break

3:46 - 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 - 5:30

Poster Session + Pizza

All posters are featured.

6:00 pm

Friday, May 17th

Asteroids and DART

Chair: Matt Tiscareno
Slack Chair: Smadar Naoz

9:15 - 10:55

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|-------|--------------|--|
| 9:15 | Dahlia Baker | Asteroid Obliquity Evolution due to Boulder-Induced YORP |
| 9:30 | Paul Chodas | Deflecting an Asteroid: A Numerical Comparison of Techniques |
| 9:45 | Rachel Cueva | Semiseccular Resonances within the Long-Term Dynamical Evolution of Didymos |
| 10:00 | Paul Wiegert | The closest upcoming encounters between asteroid 99942 Apophis and the known asteroids |
| 10:15 | Alex Meyer* | The Rotational State of Dimorphos |



After the DART Impact

The size-frequency distribution of terrestrial planet formation leftover planetesimals compared to that of the S-complex component in the main asteroid belt.

Constraining the depletion rate of Hungaria asteroids under the influence chaos and relativity.

10:30 Rogerio Deienno (remote)

10:40 David Minton

Coffee Break

10:55 - 11:15

Kuiper Belt / TNOs / Trojan Session 2

Chair: Sam Hadden

Slack Chair: Matt Tiscareno

11:15 - 11:40

11:15 Meagan Thatcher

Exploration of Spin-Orbit Dynamics in TNO Binary Borasisi-Pabu

11:30 Sebastian Ram'rez (remote)

Long-term Dynamical Stability in the Outer Solar System: Leaking rate of Neptune's Mean Motion Resonance

Triples

Chair: Alexander Stephan

Slack Chair: Yubo Su

11:40 - 12:10

11:40 Barry Ginat**

Three-Body Binaries and Gravitational-Wave Sources

11:55 Barak Kol

The flux-based statistical theory for the three-body system

Codes and tools

Chair: Matthew Tiscareno

Slack Chair: Michelle Vick

12:10 - 1:05

12:10 David Hernandez

Multiple timestep reversible N-body integrators

12:25 Tiger Lu

TRACE: Time-Reversible Algorithm for Astrophysical Close Encounters

12:40 Daniel Tamayo

Teaching planetary dynamics with the celmech and REBOUND(x) packages

12:55 Matthew Holman (remote)

ASSIST: An Ephemeris-Quality Test Particle Integrator

1:05 - End of Meeting and goodbyes

Poster Presentations TBA

Available all week

This will also be the order of presentation of the posters on Thursday afternoon

Althea Moorhead

A suite of online tools for meteoroid environment modeling

Dallin Spencer

SBDynT: Real-Time Characterization of Small Body Dynamics Code for Solar System Surveys

William Oldroyd

Dynamical Migration of Discoveries from the Active Asteroids Citizen Science Project

Tatsuya Akiba

Hungry, Hungry White Dwarfs: Tidal Disruption of Planetesimals from an Eccentric Debris Disk Following a White Dwarf Natal Kick

Marina Brozovic

GAIA astrometry for the natural satellites of the solar system

Matthew Doty

Characterizing the transition from stability to instability in compact multi-planet systems

Phoebe Sandhaus

EXOZIPPY: A Python translation of EXOFASTv2 to simultaneously model stars and planets

Kaustub Anand

Formation of Rings around Centaurs

Ian Brunton

The Amalthea Group: Modeling migration of Jupiter's inner moons to constrain primordial conditions of the



| | |
|--------------------------------|---|
| Alessia Guido | Jovian circumplanetary disk. Manifold connections and the transport of small bodies through mean motion resonances in the Solar System |
| Maia Wertheim | Searching for Milky Way Satellite Streams in the Distant Halo |
| Supakrai Teekamongkol | Elucidating the dominant sources of chaos in compact 3-planet systems |
| Roy Omar Edgar Bustos Espinoza | PERTURBATION EFFECTS AND THE EVOLUTION OF gLSBGs: THE CASE OF MALIN 1 - PAST & FUTURE INTERACTIONS WITH SATELLITE GALAXIES |
| Evgeny Romashets | Mechanism of slowing down rotation of hot jupiters |
| Amir Siraj | Are There Terrestrial Planets Lurking in the Outer Solar System? |
| Aster Taylor | The Formation and Structure of Circumplanetary Disks |
| Andrew Lapeer | Probing the Lower Limits of Detectable Central Black Hole Masses in Virgo Cluster CSS with JWST NIRSpec IFU Kinematics |
| Nathan Sandford | A Chemodynamic Analysis of the Ultra-faint Dwarf Galaxy Boötes I with $S^{⁵}$ |
| Kecheng Qian | Dynamical Friction Models for Black Hole Binary Formation in Active Galactic Nucleus Disks |
| Benjamin Hanf | Orbital Migration through Atmospheric Mass Loss |
| Xiangyuan Ma | Using graph neural networks to detect dark matter in stellar streams |
| Kaitlyn Chen | Carving Out the Inner Edge of the Exoplanet Period Ratio Distribution through Dynamical Instabilities |
| Lucas Pereira | Confined Chaos and the Chaotic Angular Motion of Atlas, a Saturn's Inner Satellite |
| Valerio Carruba | On the identification of the first two young asteroid families in g-type non-linear secular resonances |
| Victor Afigbo | Resonant responses to planetary normal-modes reveals some secrets of Saturn's C-Ring |
| Rogério Deienno | The size-frequency distribution of terrestrial planet formation leftover planetesimals compared to that of the S-complex component in the main asteroid belt. |
| David Minton | Constraining the depletion rate of Hungaria asteroids under the influence chaos and relativity. |
| Anargyros Dogkas | An Analytical Method for Resonant Proper Elements |
| Saahit Mogan | Effect of Tidal Circularization on Circumbinary Planet Populations |
| Zhijie (Jay) Xu | The cosmic quenching and scaling laws for the evolution of SMBHs and host galaxies |
| Robert Jacobson | The Orbit of the Small Saturnian Satellite, Daphnis |
| Sara Di Ruzza | Analysis of co-orbital motion of real asteroids in a medium-term timescale |
| Luke Dones | Nongravitational Accelerations for Long-Period Comets: How Well Can We Determine Original Orbits? |
| Andrew Li | The simultaneous globular cluster and dwarf galaxy origins of the Jhelum stellar stream |

Source URL: <https://dda.aas.org/meetings/2024/program>

Links

[1] <https://submissions.mirasmart.com/DDA55/Itinerary/EventsAAG.aspx>

[2] <https://dda.aas.org/meetings/2024/presentation-guidelines-and-tips>



[3] <https://campusevents.utoronto.ca/myhal-150-lobby/>

[4] [https://www.google.com/maps/place/Myhal+Centre+for+Engineering+Innovation+and+Entrepreneurship+\(MY\)/@43.6612589,-79.3962868,17.69z/data=!4m6!3m5!1s0x882b3507c2ae5979:0x877d95bac233a7f5!8m2!3d43.6607349!4d-79.3966122!16s%2Fg%2F11gj0sd9qf?entry=ttu](https://www.google.com/maps/place/Myhal+Centre+for+Engineering+Innovation+and+Entrepreneurship+(MY)/@43.6612589,-79.3962868,17.69z/data=!4m6!3m5!1s0x882b3507c2ae5979:0x877d95bac233a7f5!8m2!3d43.6607349!4d-79.3966122!16s%2Fg%2F11gj0sd9qf?entry=ttu)

[5] <https://amsterdambeer.com/pages/brewhouse-by-the-lake>