

DDA Annual Report – 2021

Kat Volk, Chair; Maryame El Moutamid, Secretary

- I. **The membership of the DDA**, as of May 21, 2021, is 321: 182 Full Members, 18 Affiliate Members (including 7 international affiliates), 63 Emeritus Members, 31 Graduate Student Members, 17 Undergraduate Student Members, 9 Amateur Members, and 1 Educator Affiliate Member. Division membership in August 2020 stood at 342.
- II. **Quarterly Committee meetings:** The DDA Committee continued to meet on a quarterly basis this year, using Skype for all meetings.
- III. **Elections:** The 2021 DDA Election was held entirely online through the AAS. In 2019, the membership voted to change in the DDA bylaws to increase the term length of Committee members to three years (from two years) and to elect two new members per year (rather than three). To maintain the size of the Committee during the transition to members elected entirely under the new bylaws, the Committee voted to extend the term of two Committee members (originally elected to serve from 2019-2021) by one year. After the next election cycle, all committee members will have been elected for the new three-year terms.

Continuing Officers (all new terms begin July 1st, 2021):

CHAIR (2021-2022):

Ruth Murray-Clay (U. California, Santa Cruz) rmc@ucsc.edu

PAST CHAIR (2021-2022):

Kat Volk (LPL, U. Arizona) kvolk@lpl.arizona.edu

TREASURER (2021-2024; re-elected for 2nd term):

Joseph Spitale (Planetary Science Institute) jnspitale@psi.edu

COMMITTEE (2021-2022; 1 year term extensions due to change in bylaws):

Darin Ragozzine (Brigham Young) darin_ragozzine@byu.edu

Gongjie Li (Georgia Tech) gongjie.li@physics.gatech.edu

COMMITTEE: (2020-2023):

Juliette Becker (Caltech) jbecker@caltech.edu

Robyn E. Sanderson (UPenn) robynes@sas.upenn.edu

New Officers:

VICE CHAIR (2020-2021):

Daniel Tamayo (Princeton) dtamayo@astro.princeton.edu

SECRETARY (2021-2022; appointed to fill out term):

Althea Moorhead (NASA Marshall) althea.moorhead@nasa.gov

NEW COMMITTEE MEMBERS : (2021-2024):

Sarah Millholland (Princeton) sarah.milholland@astro.princeton.edu

Luis Aguilar (UNAM) aguilar@astro.unam.mx

Retiring Officers:

PAST CHAIR (2020-2021):

Carl Murray (Queen Mary University, London) c.d.murray@qmul.ac.uk

SECRETARY (2019-2021):

Maryame El Moutamid (Cornell) maryame@astro.cornell.edu

COMMITTEE (2019-2021):

Althea Moorhead (NASA Marshall) althea.moorhead@nasa.gov

COMMITTEE (2018-2021):

Smadar Naoz (U. California, Los Angeles) snaoz@astro.ucla.edu

IV. Meetings

The 2020 virtual DDA meeting was held in August 2020. The details of the meeting are in the 2020 annual report, but the updated budget numbers show a \$362 loss from the meeting (\$11,735 in revenue from registrations and \$12,097 in expenses; AAS staff expenses were significantly under-estimated in the original meeting budget due to inexperience with the virtual meeting format; AAS staff have been invaluable in making our virtual meetings successful). The small loss was covered by prior meeting surpluses, as originally planned.

The 2021 virtual DDA meeting is being held May 17-21, 2021. The estimated meeting budget was \$18,900 (subject to increases due to increased meeting

size). The increase over 2020 reflects invited speaker fees (which the committee voted to use prior meeting surpluses to cover), hiring Warp Speed to handle all of the talk, poster, and session recording uploads (partly covered by the modest increase in the full registration fee over last year), and an increase in the number of abstracts. There are ~145 abstracts and 210 meeting registrants (\$19,790 in registration revenue).

Future Meetings: There is no decision yet for the 2022 meeting. We are reaching out to Cornell who were to have hosted us in-person in 2020. We are discussing options for future meeting formats during the 2021 members' meeting.

V. DDA Prizes

2021 Brouwer Award:

Professor Amina Helmi (Kapteyn Astronomical Institute at the University of Groningen)

The American Astronomical Society's Division on Dynamical Astronomy (DDA) is pleased to announce that the 2021 Dirk Brouwer Career Award is given to Professor Amina Helmi (Kapteyn Astronomical Institute at the University of Groningen) to recognize and celebrate her outstanding



contributions to the field of galactic dynamics. Professor Helmi is one of the world's leading researchers in the burgeoning field of galactic archeology. Her work combines theory, computer simulations, and observational campaigns to study how the hierarchical formation history of galaxies leaves traceable imprints in their dynamical-chemical structure. In particular, she has used large datasets from GAIA and other surveys to reconstruct in detail the past dynamical history of the Milky Way.

Professor Helmi's work provided direct evidence that a fair fraction of the Milky Way globular clusters originate from accreted satellite dwarf galaxies. She also discovered that the inner halo of our Galaxy is dominated by debris from a much larger accreted system, which she named Gaia-Enceladus. She demonstrated that its accretion must have led to substantial dynamical heating and was a key contributor to the formation of the so-called thick disk, starting about 10 billion

years ago. This major event is most likely the defining moment in the formation history of the Milky Way, and is consistent with our theoretical expectations from cosmological simulations.

In addition to her own research and impressive publication record, Professor Helmi has also mentored many students and postdoctoral researchers who have moved on to begin outstanding careers of their own.

Professor Helmi will be invited to give a lecture at the 53rd annual DDA meeting in the spring of 2022.

2021 Vera Rubin Prize:

Professor Ann-Marie Madigan (University of Colorado, Boulder)

The American Astronomical Society's Division on Dynamical Astronomy (DDA) is pleased to announce that the 2021 recipient of the Vera Rubin Early Career Award is Professor Ann-Marie Madigan of the University of Colorado, Boulder for her work on the dynamics of near-Keplerian systems composed of objects that are individually small, but collectively massive.

Professor Madigan earned her Ph.D. from Leiden University in 2012 under the direction of Prof. Yuri Levin. Her work spans a wide range of astrophysical and planetary sciences, from the dynamics of stars and gas around supermassive black holes to the collective gravity of minor planets in the outer solar system. Interactions between stars and their remnants with supermassive black holes produce exotic astrophysical events including tidal disruptions of stars, ejections of hyper-velocity stars into a galactic halo, and gravitational-wave-driven inspirals of compact objects into the central black hole. Professor Madigan has advanced our understanding of the statistical properties of the orbits of stars around these supermassive black holes, the interaction of intermediate black holes with supermassive black holes, and the stability of stellar disks in active galactic nuclei. Her work also probed the formation history of stars near galactic nuclei, the evolution of their orbits, and the mechanism by which they can be disrupted and ultimately captured by the



central black hole. She has further applied her knowledge of near-Keplerian systems to other scales; she has suggested of a possible mechanism by which the observed alignments of the orbits of long-period Kuiper belt objects in the Solar System could arise, and suggested that the mutual gravity of comets could cause a periodic influx of comets into the inner Solar System.

Professor Madigan will be invited to give a lecture at the 53rd annual DDA meeting in the spring of 2022.

Duncombe Prize:

The Raynor Duncombe Prize is a travel stipend awarded each year to up to four graduate students to enable them to attend the DDA meeting and give a talk. We had 17 nominees for the prize this year, and the following students were selected:

Jiayin Dong (Penn State)

Arcelia Hermosillo Ruiz (UC Santa Cruz)

Tatsuya Akiba (CU Boulder)

Max Goldberg (Caltech).

These four students will be honored at the 2021 Virtual DDA Meeting, where they will give talks on their research. In lieu of a travel stipend for the 2021 virtual meeting, these students will receive a travel stipend for the next in-person DDA meeting.

VI. Committee Appointments:

Below we list the members of various committees and their terms of appointment with new members indicated. (Full committee membership lists are also on the DDA website: <https://dda.aas.org/about/leadership>)

Brouwer Award Selection Committee:

2021-2022: Benoît Noyelles (University of Franche-Comté) *Chair*

2021-2022: Ruth Murray-Clay (UC Santa Cruz) *ex officio*

2021-2022: Lennart Lindegren (Lund University) *past recipient member*

2020-2023: Marina Brozovic (JPL) *continuing regular member*

2021-2024: Dimitri Veras (University of Warwick) *new regular member*

Rubin Prize Selection Committee:

2021-2022: Katherine Johnston (Columbia) *Chair*

2021-2022: Daniel Tamayo (Princeton) *ex officio*

2021-2022: Jacqueline Faherty (American Museum of Natural History) *past recipient member*

2020-2023: Apostolos Christou (Armagh Observatory) *continuing regular member*

2021-2024: TBD

Duncombe Prize Selection Committee:

2021-2022: Cristobal Petrovich (CITA) *Chair*

2020-2023: Maria Tiongco (CU, Boulder) *continuing regular member*

2021-2024: Matt Clement (Carnegie Institution of Washington) *new regular member*

Nominating Committee:

2021-2022: Matija Cuk (SETI) *Chair*

2020-2023: Rosemary Wyse (JHU) *continuing regular member*

2021-2024: Rebekah Dawson (Penn State) *new regular member*