

Laboratory Astrophysics Division of the American Astronomical Society

Annual Report

August 30, 2023

Executive Committee Members

Chair: Stefanie Milam – NASA GSFC

Vice Chair: Nancy Brickhouse – Harvard-Smithsonian Center for Astrophysics

Past Chair: Murthy Gudipati – NASA JPL

Treasurer: Christiaan Boersma – NASA Ames Research Center

Secretary: Rachel L. Smith – NC Museum of Natural Sciences Appalachian State University

Member at Large (Molecules): Brett McGuire - MIT

Member at Large (Particles): Dawn Williams – University of Alabama

Member at Large (Plasmas): Ami DuBois – U.S. Naval Research Laboratory

Member at Large (Planetary): Carrie Anderson – NASA/GSFC

Member at Large (Atoms): Amy Gall – SAO/CfA

Member at Large (Dust & Ices): Andrew Mattioda – NASA/Ames

Member at Large (Nuclear): Catherine Deibel – Louisiana State

Overview

The Laboratory Astrophysics Division (LAD) celebrated our 10th anniversary in 2022 and have continued to grow the division. The 2023 election resulted in **three new Members-at-Large** in the areas of Atoms, Dust & Ices, and Nuclear and **a new Vice Chair**. The winners were announced at the LAD business meeting held during the annual LAD/AAS meeting. The rotation of chair position also occurred in June 2023, with the vice chair coming into the chair position, and having the newly elected vice chair begin. LAD currently has **284 members** (not including AAS staff). This is a slight increase from 255 at the beginning of the summer AAS meeting.

Rachel Smith (Secretary) has remained responsible for the maintenance of the distribution list for LAD, and Amy Gall (Member at Large) now updates the LAD webpage. They are supported in these tasks by the AAS' IT office. Otherwise, the various activities for the most part take place through email consultation, and a monthly executive committee Zoom call. During the Zoom calls action items are dealt with and discussions center around plans for enhancing membership and visibility of LAD, as well as new ways of interfacing with the other AAS Science Divisions, occur. We are also addressing other objectives now with potentially reaching new areas of Astrophysics (e.g. Exoplanets), supporting the Astronomy and Astrophysics Advisory Committee, joint meetings in the future with the American Chemical Society's Astrochemistry sub-division, and efforts to enhance our diversity in our division. The executive committee is also developing SOPs for the given roles to help initiate incoming members and provide guidance on expectations in these positions.

The LAD objective has been updated/revised to emphasize we are working *with* the astronomy communities and not *for*.

The objective of the Laboratory Astrophysics Division (LAD) is to advance our understanding of the Universe through the support and dissemination of theoretical and experimental research, including observational astrophysics and planetary science, that collectively explore the fundamental processes that drive the cosmos.

Key concerns for the division include enhancing membership, especially diversity, and income. This is especially critical if the summer AAS meeting will no longer be in place to host our joint meeting. Discussions are underway with the executive committee on potential strategies on how to accommodate

an independent meeting – however, the primary goal of having the meeting jointly with the AAS is to promote the discussion and collaboration with our observational and theoretical colleagues. This is the critical function of the division, and not having the opportunity for that exchange freely at a meeting will be limiting for our field.

Highlights for 2022-2023

At the 2022 Division for Planetary Science meeting, LAD Member-at-Large for Planetary and the Vice Chair organized a special hybrid session on “Laboratory Studies to Support the Next Decade of Planetary Missions”. This included three invited speakers and contributed posters. The session was well attended both virtually and in person.

At the 2023 AAS Winter meeting, LAD organized two special sessions: “Experimental and Theoretical Needs for the James Webb Space Telescope” and “Mars Habitability”. The JWST session included 3 panels on various topics with laboratory and observers discussing the laboratory and theoretical needs for these new data. The Mars session had invited speakers and contributed posters. These were both well attended sessions.

The 2023 AAS Summer joint meeting with the Laboratory Astrophysics Division was well attended. We had our annual business meeting and meeting-in-a-meeting that included three special sessions on Hard Metal Astrophysics, The Role of Laboratory Plasma Experiments in Astrophysics, and World of Databases all including invited and contributed talks. We also had a great turn out for posters.

At the Summer 2023 AAS joint meeting, Ted Bergin (University of Michigan) gave an extremely well-attended plenary talk for LAD on the topic of “*The Birth of Planets and the Story of Carbon*”. His presentation showed the synergy and need for supporting laboratory and theoretical astrophysics for the interpretation of astronomical observations.

The winner of the 2023 Laboratory Astrophysics Prize was Dr. Reggie Hudson of NASA Goddard Space Flight Center. He presented the prize lecture “Laboratory Astrophysics and More from NASA's Cosmic Ice Laboratory” at the summer meeting.

The 2019 Laboratory Astrophysics Prize awardee, Dr. Lucy Ziurys of the University of Arizona, also gave her prize talk at the summer meeting titled “At the Interface: Laboratory and Radio Astronomical Spectroscopy of Exotic Interstellar Molecules”. This was delayed the past few years due to COVID and travel issues.

The 2023 Early Career Award went to Dr. James Schroeder of Weaton College. He gave his award talk titled “*Laboratory explorations of energetic electrons in space plasma: results and opportunities*” at the summer MiM.

The 2023 Dissertation Prize went to Dr. Katarina Yocum of NASA Goddard Space Flight Center. She gave her prize talk “*The Development and Application of SubLIME: Sublimation of Laboratory Ices Millimeter/submillimeter Experiment*” at the 2023 summer meeting.

A number of nominations are under consideration for next year's prizes, including the Laboratory Astrophysics Prize, the Early Career Award, and the Dissertation Prize. The first two are expected to be evaluated by the LAD Honors Committee at the beginning of September in two separate committees chaired by Murthy Gudipati.

In our efforts to seek connections with other Divisions of the AAS, we are planning to organize joint sessions with HAD at the winter AAS meeting.

One proposal for a special LAD session at the 243rd AAS 2024 Winter meeting has been accepted: "Laboratory Astrophysics Division: Critical Evaluation of Spectral Data for Exoplanet Observations with Current and Future Missions and Facilities", organized by our Vice Chair. We will have a few invited speakers, being finalized now. We hope to attract a number of contributed abstracts that could be distributed among contributed talks, iPosters, and iPoster Plus presentations on these and other LAD topics.