

# Laboratory Astrophysics Division of the American Astronomical Society

Annual Report  
Sep 2, 2022



## Executive Committee Members

Chair: Murthy Gudipati – Jet Propulsion Laboratory, California Institute of Technology  
Vice Chair: Stefanie Milam, NASA Goddard Space Flight Center  
Past Chair: Phillip Stancil – University of Georgia  
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 – Massachusetts Institute of Technology  
Member at Large (Particles): Dawn Williams – University of Alabama  
Member at Large (Plasmas): Ami DuBois – Naval Research Laboratory  
Member at Large (Planetary): Carrie Anderson – NASA GSFC  
Member at Large (Atoms): Joan Marler – Clemson University  
Member at Large (Dust & Ices): Edith Fayolle – NASA JPL  
Member at Large (Nuclear): Carla Frohlich – North Carolina State University

## Overview

The Laboratory Astrophysics Division (LAD) came into being at the AAS Anchorage meeting of June 2012 and celebrated its 10<sup>th</sup> anniversary in 2022. This year (2022) elections were held for two new Members -at-Large in the areas of Plasma and Planetary and the Secretary as well as the Treasurer were re-elected uncontested for their second term. The winners were announced at the LAD business meeting held during the annual LAD/AAS joint meeting in June 2022. LAD currently has 243 (vs. 239 in 2021) members (including AAS staff and 14 affiliate members). The LAD listserv has over 700 subscribers, staying study over the past few years as well.

As of April 30, 2022, our total financial balance was \$33,774, compared to \$33,319 and \$33,950 at the end of CY2021 and CY2020, respectively. For the first quarter of CY2022, our revenues from dues and contributions totaled \$1,167, while our expenses (all due to prizes) were \$712. With LAD's continued healthy ledger, for CY21 and CY22 the Executive Committee considered expenditures to promote LAD membership. Of these, organizing an in-person LAD reception, a redesign of the LAD logo, and have pins with the LAD logo produced came to fruition. As such, the LAD expenses for CY2021 were dominated by the investment in the logo redesign and that for Q1 of CY22 with pin production costs. This resulted in a net \*loss\* of \$ 631 for CY21.

LAD executive committee has been holding regular monthly virtual meetings to discuss the progress made in the previous month(s) and forthcoming action items. For the near-term and immediate action items email and/or phone conversations are used. Most of the monthly meetings focus on LAD/AAS meetings and sessions, the LAD awards and prizes, webpage and LAD logo improvements, as well as means to engage the community with LAD. We also established communication between LAD and AAS administrative staff through LAD Secretary to enable coherent and effective communication.

***Additional focus of LAD coming years is (a) to increase its membership through the membership drive with the help of AAS, and (b) to interface with other AAS divisions, including organizing joint meetings that enable cross-discipline collaborations.***

## Highlights for 2021 – 2022

**LAD has a new logo:** A subcommittee of LAD executive committee worked with professional designers and finalized the new logo (as shown on the top of this report).

**LAD celebrated its 10<sup>th</sup> birthday** during the AAS/LAD joint meeting in Pasadena June 12-16, 2022, the first in-person and remote hybrid meeting post COVID-19 pandemic.

**January 2022 LAD Sessions at the AAS Winter Meeting moved to January 2023 AAS Winter Meeting:** LAD continued to bring community together with special sessions proposed at the AAS winter meetings. Our strategy is to bring current activities in astrophysics and planetary sciences to the AAS meetings, focusing on the critical role LAD community could play. We proposed two sessions, one on JWST science and the other on Mars Habitability, both were accepted. Unfortunately, the AAS winter meeting had to be cancelled. We have repropose the same sessions for the AAS winter meeting in January 2023 and we are pleased that they have been approved again. We look forward for two excellent sessions, keeping the amount of excitement and new data coming from the JWST telescope.

**June 2022 LAD Sessions at the AAS Summer Meeting in Pasadena:** We had the post-COVID pandemic in-person and remote hybrid meeting. Majority of the participants were in-person, with a few online participants. Though there were some hiccups with online participation/presentations, overall, the summer meeting was highly successful.

There were 8 sessions over 4 days. Two on “*Salty Solar System*”, two on “*History of Spectroscopic Instrumentation*” (jointly with the Historical Astronomy Division, HAD), three on “*Carbon in the Universe*”, and one on “*Plasma*”.

We had a total of 29 oral presentations (1 plenary 3 prize/award talks, 13 invited, and 12 contributed presentations), and 8 iPoster Plus presentations. A total of 37 compared to 47 in 2021, and 51 in 2020). While invited talks remained similar, the decline in this year’s number is mainly due to iPoster Plus talks (25 in 2021 vs. 8 in 2022).

Additionally, LAD organized a Business Meeting as well as a “LAD Reception”. Both activities were well attended.

**Plenary, Prizes, and Awards CY2022:** At the Summer 2022 AAS meeting, Denis Bodewits (Auburn University) delivered the plenary lecture “*Comets as Natural Laboratories*”, where he discussed how observations of comets in timescales that are much larger than the laboratory timescales, is critical and how those observations can be combined with laboratory work to better understand the leftovers of our solar system formation – the comets.

The winner of the 2022 Laboratory Astrophysics Prize was **Evelyne Roueff of Observatoire de Paris**. As a theoretical astrophysicist, who contributed significantly to understand spectroscopic and collisional properties of molecules in astronomical environments, Evelyne delivered historical perspective of how her work in collaboration with experimental and observational scientists contributed present understanding of hydrogen formation in astrophysical environments at the 2022 Annual AAS/LAD hybrid meeting. Her talk was titled “*Molecular Outlook in Astrophysics: Past, Present and Future*”.

The 2022 Early Career Award went to **Kyle Crabtree of UC Davis**. Kyle made significant contributions to the field are founded in a unique career at the intersection of molecular laboratory astrophysics, astronomical observations, and astrochemical modeling. His award talk at the 2022 Annual AAS/LAD hybrid meeting was titled “*Rotational spectroscopy of nitrogen-containing radicals*”.

The 2022 Dissertation Prize went to **Steve Bromley of Auburn University**, for his work on Laboratory measurements on the spectra of Au-I and Au-II, generating critical data for our understanding of heavy metal formation in neutron star mergers, as described in his doctoral thesis "Atomic Data Needs in Laboratory Astrophysics: Experimental Methods for Spectroscopy and Charge Exchange with Ions." Steve gave his prize talk "*Fundamental Atomic Data for Platinum Group Elements in Neutron Star Merger Plasmas*" at the 2022 Annual AAS/LAD virtual meeting.

**October 2022 (planned):** DPS 2022 (Oct 2-8) will be held in London, Canada and we have a special splinter on Laboratory Studies to Support the Next Decade of Planetary Missions on Monday at noon. (co-organized with M-a-Ls: Carrie Anderson and Edith Fayolle). This splinter is being supported by the DPS.

#### **LAD Community Service in 2022:**

- 1) Unified Astronomy Thesaurus (UAT). LAD worked together with the curators of the Unified Astronomy Thesaurus (UAT) to solicit and synthesize community feedback to update and expand the list of Labastro-related keywords in the UAT. The UAT is used to assign keywords to journal articles in the Astrophysical Journals, among others. A first update was made for summer 2022, with future revisions planned as well. Lead: Brett McGuire (MaL Molecules)
- 2) Planetary science and astrobiology decadal survey (2022-2032): Many recommendations by LAD have been included into the planetary sciences and astrobiology decadal. Lead: Edith Fayolle (MaL dust/ice)
- 3) Response to NASA RFI regarding SPD-41 (modifications will be announced in 2023): LAD responded to the NASA RFI for SPD-41 with the feedback from LAD community. NASA is modifying their Scientific Information Policy (SPD-41) on how and when data and information resulting from NASA research grants and missions should be made public. Lead: Edith Fayolle (MaL dust/ice)

#### **Ongoing Activities:**

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 Phillip Stancil and Murthy Gudipati.

AAS Journals continued to coordinate with LAD on the monthly blast of Laboratory Astrophysics papers sent out to LAD listserv members. Laboratory Astrophysics articles published each month in the AAS journals are compiled with the goal of sending the blasts before the 15<sup>th</sup> of each month. LAD has monthly Zoom meetings with the entire Executive Committee to confer on action items and strategic planning.