

# Laboratory Astrophysics Division of the American Astronomical Society

*Annual Report*

August 30, 2020



## Executive Committee Members

Chair: Phillip Stancil – University of Georgia

Vice Chair: Murthy Gudipati – NASA JPL

Past Chair: Randall Smith – Smithsonian Astrophysical Observatory

Treasurer: Christiaan Boersma – NASA Ames Research Center

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

Member at Large (Molecules): Michael McCarthy – Harvard-Smithsonian Center for Astrophysics

Member at Large (Particles): Kenneth Nollett – San Diego State University

Member at Large (Plasmas): Mike Hahn – Columbia University

Member at Large (Planetary): Silvia Protopapa – Southwest Research Institute

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. The seventh election (2020) resulted in **three new Members -at-Large** in the areas of Atoms, Dust & Ices, and Nuclear. The winners were announced at the LAD business meeting held during the annual LAD/AAS meeting, but virtual, in June 2020. LAD currently has **232 members** (not including AAS staff), with the majority (96%) being full members. This is a slight increase from 223 members at the time of the last Division report. The LAD listserv has **699 subscribers**, slightly up from the 691 listed for the last Division report. On March 30, 2020, our total financial balance was \$31,257, compared to \$26,472 and \$29,335, at the end of CY2018 and CY2019, respectively. For the first quarter of CY2020, our revenue from dues and contributions totaled \$1,922.

Since June 2019, Rachel Smith (Secretary) has taken over maintenance of the distribution list for LAD from the past Secretary, while Joan Marler (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, though we now hold 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.

## Highlights for 2019-2020

The officers and committee members have publicized LAD and Laboratory Astrophysics at a number of national and international meetings to encourage the community of users and providers to join LAD (see Chronology below).

At the Summer 2020 Virtual AAS meeting, Paola Caselli (MPI For Extraterrestrial Physics) gave an extremely well-attended virtual plenary talk for LAD on the topic of "*The Crucial Interplay of Laboratory Experiments, Observations and Theory to Unveil our Astrochemical Origins*". Her presentation was a case study for how to give a great Zoom talk, acknowledging a six-hour time difference.

The winner of the 2020 Laboratory Astrophysics Prize was Dr. James Truran of the University of Chicago. Unfortunately, due to Dr. Truran's health he was unable to give his talk. Instead, his close collaborator, Dr. John Cowan of the University of Oklahoma gave the prize lecture "*Jim Truran's Contributions to Nuclear and Laboratory Astrophysics*".

The 2020 Early Career Award went to Dr. Sarah Hörst of Johns Hopkins University. She gave her award talk titled "*Planets in a Bottle: exploring planetary atmospheres in the Lab*" at the 2020 Annual AAS/LAD virtual meeting.

The 2020 Dissertation Prize went to Dr. Natalie Hell from Lawrence Livermore National Laboratory. She gave her prize talk "*Atomic Physics measurements at the Livermore electron beam ion trap and their application to X-ray astrophysics*" at the 2020 Annual AAS/LAD virtual 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 Randal Smith and Phillip Stancil.

A series of six sessions were held at the 2020 LAD Annual Meeting: "*Bridging Laboratory and Astrophysics*" organized by the LAD Committee. The lead organizer for the 2020 meeting was the Vice-Chair Murthy Gudipati with help from Secretary Rachel Smith and Chair Phillip Stancil. The sessions were organized around six different themes: Cosmochemistry and Dust; Astrochemistry; Nuclear, Plasma, and Particle Astrophysics; Atomic Data for XRISM; Planetary Atmospheres, Protoplanetary Disks, and Small Bodies; and Ocean Worlds. A total of 10 invited talks were given. We had a record number (24) of requests for contributed talks, but due to time limitations only 15 were accepted. The remainder presenting iPosters (20) or iPoster Plus (6). Two iPoster Plus sessions were devoted to LAD.

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.

In our efforts to seek connections with other Divisions of the AAS, we are planning to organize joint sessions with HEAD for the Summer 2021 AAS meeting.

Two proposals for special LAD sessions at the 237<sup>th</sup> AAS 2021 Virtual Winter have been accepted: *i*) New Explorations of the Moon and *ii*) New Understanding of Primitive Bodies: Comets and Kuiper Belt Objects. We are extremely excited that six talented speakers will give invited talks for these sessions. 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.

LAD Member-at-Large Dr. Edith Fayolle led the effort for a white paper submitted to the Planetary Science and Astrobiology Decadal Survey 2023-2032 panel. The white paper is titled "*Critical Laboratory Studies to Advance Planetary Science and Support Missions*" and was co-authored by current members of the LAD leadership (Murthy Gudipati, Silvia Protopapa, and Rachel Smith) and past LAD leadership (Farid Salama, Ella Sciamma-O'Brien, and Stefanie Milam).

### LAD Events' Chronology:

- Sep 2019: Nominations due for Laboratory Astrophysics Prize (LAP) and Early Career Award (ECA)
- Sep 2019: Honor Committee formed
- Sep 2019: Call sent out for Dissertation Prize
- Oct 2019: AAS Leadership Meeting

- Nov 2019: Completed proposed sessions and speakers for 2020 LAD meeting
- 31 Dec 2019: Nominations for Dissertation Prize due
- Jan 2020: Prepared press releases for LAP and ECA winners.
- Jan 2020: LAP and ECA awards announced
- Jan 2020: Dissertation Prize winner selected
- Jan 2020: Finalized summer meeting plans
- Feb 2020: Ask IT staff update LAD membership list to prepare for upcoming election
- Feb 2020: Beginning of 16-week election period. Sent out call for three open Members-at-Large seats (in Atoms, Dust & Ices, Nuclear). Form Nominations Committee.
- Mar 2020: Prepared press release for Dissertation Prize
- Mar 2020: Dissertation Prize Announced
- Apr 2020: Close of nomination period. Candidate slate received from Nominating Committee
- May 2020: Voting began
- June 2020: Had AAS IT update the LAD Executive Committee mailing list
- July 2020: Sent out final call for nominations for the 2021 Laboratory Astrophysics Prize (LAP) and Early Career Award (EAC) nominees
- 15 July 2020: Closing date for LAP and EAC nominations
- Aug 2020: Created list of nominees and their institutions and letter writers and their institutions to guide in the formation of an Honors Committee free of any conflicts of interest
- Aug 2020: Honors Committee formed
- Sept 2020: Select LAP and EAC winners