

LSST Discovery Alliance

Rubin LSST: Maximizing the Impact

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November 4, 2026, LSST@LATAM

What is LSST Discovery Alliance?

- A consortium of ~40 member institutions and consortia.
- Goal: to maximize the impact of Rubin LSST.

How?

- Using private funding
- Designing, launching, and/or running programs that:
  - Complement or extend existing initiatives, and
  - Would be difficult for an isolated institution to run.

- History: got LSST started
- Role in LSST ecosystem: some financial support to SCs, who offer input; close communication with Rubin Obs



LSST-DA in Latin America

Member Institutions:

- LIneA
- Chile
- SECIHTI (Mexican consortium)

Examples of recent participation in DA programs:

- SECIHTI ”Expansion” membership fully funded
- Funding for LINCC Frameworks hack events:
  - Oct 13-15, 2026, Columbia (PI: Andres Plasaz Malogon)
  - Nov 9-12, 2026, Leon, Mexico
- Data Science Fellows, including speaker Carlos Falandes
- Chilean and LIneA participation in the Catalyst Postdoc Alliance



Programs



LINCC Frameworks

Software for the scale and complexity of LSST



Areas of Focus---see talk by Melissa DeLucchi tomorrow

- Scalable Spatial Analysis – LSDB
- Time-Domain Science – nested-pandas, LSDB, LightCurveLynx
- Scalable Faint Object Detection -- KBMOD
- Comprehensive Photo-z Infrastructure -- RAIL
- Cross-Project Infrastructure – Python project template

Community Engagement:

- Incubators!
- Hack events, and DA-funded community-run events
- Weekly office hours and monthly Tech Talks

Project Leadership:

- Andy Connolly (UW)
- Jeremy Kubica (CMU)
- Rachel Mandelbaum (CMU)
- Funding: Schmidt Sciences

Postdoc Fellowships and Networks

- Rubin Frontiers Fellowship:
  - Application deadline this past weekend (!)
  - Fellowship comes with time on GPU hardware (NVIDIA DGX H200 8-GPU server at the USDF) and access to NVIDIA training
- Catalyst Postdoc Fellowship
  - Cross-disciplinary Fellowship with structured mentoring, networking, and professional development. Two cohorts funded.
  - DA is seeking partner funding to enable more cohorts
- Catalyst Postdoc Alliance
  - Network of LSST-focused postdocs from DA member institutions
- Thanks to the John Templeton Foundation, NVIDIA



Student Programs

- Data Science Fellowship Program (DSFP, since 2016):
  - 2-year supplementary training program for grad students
  - Six one-week schools on: managing and building code, statistics, ML, scalable programming, data management, image processing, visualization, communication.
  - Course materials openly available on github.
  - Led by: Adam Miller, Lucian Walkowicz, Bryan Scott, Vicky Kalogera
  - Thanks to the Brinson, Moore, and WoodNext Foundations
- Summer Student Program
  - Brings undergraduates conducting LSST research---mostly from DA Expansion Partnership Institutions---to the RCW
  - Thanks to individual donors and the Heising-Simons Foundation
- Platform for the Rubin Undergraduate Network (RUN)



Other LSST Community Support

- Science Catalyst Grants:
  - Early 'Enabling Science' awards often supported workshops and data challenges. 72 projects from 2015 to 2019 (thanks to Charles Simonyi and Bill Gates)
  - 2023-2025, Inclusive Collaboration Projects
  - 2026 – research awards up to $120k, with software engineering support
- Childcare Support
- Expansion Partnerships
- Thanks to the Heising-Simons Foundation

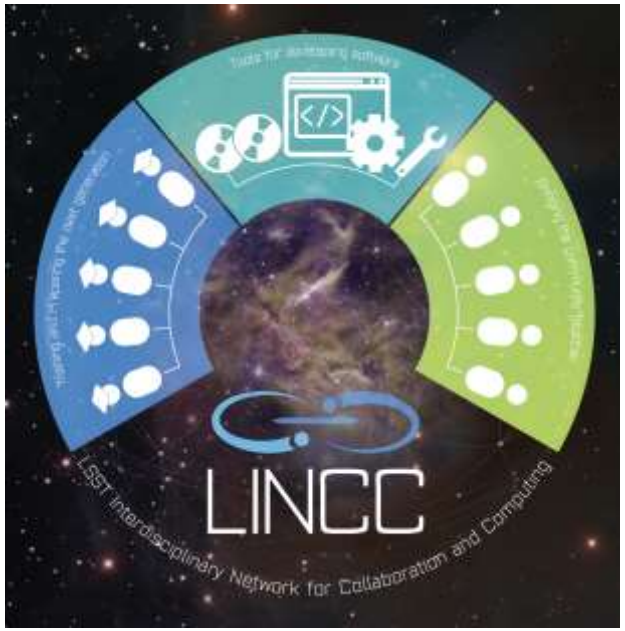

LSST-DA / T. Licul

➢ Overall, LSST-DA distributed >$2.5M to the LSST research community this year.



Raise your hand if you want to influence new LSST-DA initiatives

Designing Programs



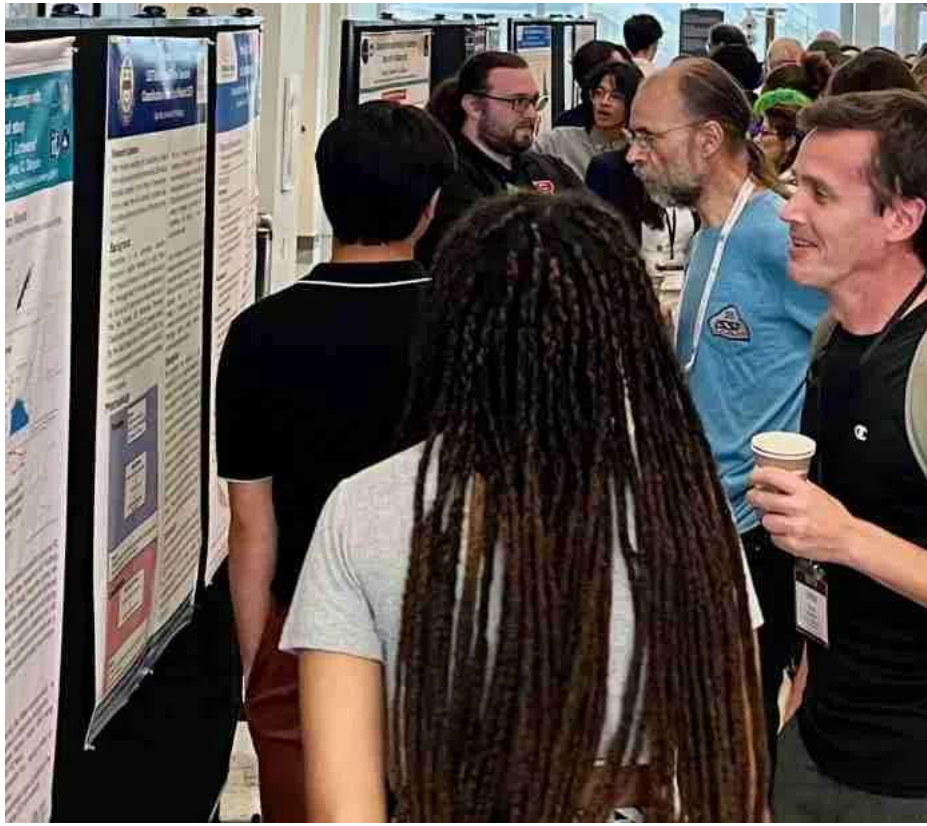
- To meet community need that we estimate at > $10M-$100M, we aim for a suite of integrated, major programs spanning: training, tools, and collaborative networks.

Sources of input:

- White papers submitted to DA
- Internal and external review panels
- Science Collaborations Advisory Committee
- Member meetings
- Executive Board guidance
- Many, many one-on-one conversations
- Proposal teams

Project Idea #1: Student Fellowships

- **Motivating questions**:
  - What does it mean to be a scientist in the age of AI?
  - What are the ethics of, e.g., allocation of credit?
  - What do future scientists need to know?
  - How should educators train science students in the AI era?
- **Proposed initiative**: A student fellowship for grads and undergrads with aspects of the Catalyst plus:
  - Tiered mentoring, mentor training, and peer support for mentors;
  - A workshop series involving students, mentors, and social scientists on training future scientists in the era of AI.
- **Invitation for input**: What features would enable a student fellowship program to help your department tackle the motivating questions listed above?



Project Idea #2: AI Infrastructure

- Motivating questions:
  - How can we evaluate claims of scientific discoveries made using ML/AI, and especially, how can we them at scale?
  - How can we ensure that Rubin discoveries made w/ are trustworthy?
- Proposed initiative: Develop, exemplify, and promote best practices for reliable use of ML/AI with LSST. Build initial technical infrastructure to support those practices.



Project #2: AI Infrastructure

- Invitation for input: What is needed in this area? What social/organizational structures to enable community consensus? What technical infrastructure (e.g., foundation models pre-trained on LSST data and made publicly available)? Talk to me if you have ideas and/or an early science use case and might like to join a proposal team.
- Possible program elements:
  - Personnel: a senior AI team, computer scientists and/or software engineers, a network of postdocs
  - Workshops: community design workshops and a workshop series with social scientists on ML/AI ethics and responsible use
  - Grants: seed funding





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