An unprecedented movie of the sky is about to be filmed

After decades of planning and construction, Rubin Observatory’s Legacy Survey of Space and Time (LSST) is about to begin. This 10-year long experiment will soon start making an unprecedented movie of half of the sky, tracking changes from night to night and peering ever deeper into the Universe. In its first year, Rubin’s LSST will map more of the universe at optical wavelengths than all previous maps of the Universe combined.

LSST will be used for studies of the deep and dynamic universe. With it, astronomers will address fundamental questions: questions of origins - how our own Solar System formed, the history of the Milky Way galaxy, how the Universe changes with time; and questions of nature - what is dark matter and how to describe dark energy.

**Rubin’s LSST will be a dominating force in the astrophysics landscape through the 2030’s, and could be the most productive scientific experiment of all time.**

A new way of doing science is needed to fulfill this potential

In support of these science goals, LSST will deliver science-ready data to thousands of scientists around the world, without any proprietary period. However, answering scientific questions with LSST presents previously unsolved challenges in astrophysics. LSST is big data. Open data and software. All on an unprecedented scale. Every 40 seconds - LSST will take a picture of a new patch of the sky the equivalent size of 40 full moons. To view a single picture in full resolution will require more than 100 ultra-HDTVs. Every 40 seconds - LSST will alert scientists and the public around the world to where and how the sky has changed that night.

The LSST Corporation is pioneering this new way of doing science

LSSTC is a worldwide coalition of institutions with shared goals and values for Rubin’s LSST. We are working together to achieve outcomes that a single institution could not achieve alone. Our programs:

- provide scientists with access to LSSTC-specific funds, community-wide tools, and funded programs designed to maximize LSST science;
- connect a diverse range of academic and research institutions to build networks of inclusive scientific excellence that bridge traditional boundaries;
- develop a diverse cadre of scientific leaders through fellowships, training programs, summer programs, and workshops;
- establish hubs of interdisciplinary collaboration at the interface of astronomy, physics, computer science, mathematics, and data science

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Why Join LSSTC?

LSSTC is a 501(c)(3) non-profit. We have recently launched >$20M of major programs to support the astrophysics community as it prepares for the flood of data, and we are vigorously seeking philanthropic support to launch more. LSSTC multiplies the impact of federal investment in the Rubin Observatory by giving scientists the freedom to design, implement, and benefit from innovative approaches to science research. Our programs cross traditional institutional boundaries and go beyond established programs.

Members benefit from preferential access to resources, influence and visibility, and participating in a like-minded community that is establishing new norms of inclusive participation in astrophysics.

The time is now: Rubin LSST first light is in 2024. Today’s undergraduate and graduate students will write the first dissertations based on Rubin LSST data and will be tomorrow’s leaders in big data and survey science.

Access to Resources - Member institutions preferentially benefit from all LSSTC programs, including:
- priority consideration in requests for software incubator resources (through the LSST Interdisciplinary Network for Collaboration and Computing - LINCC).
- priority access to graduate student training opportunities (Data Science Fellowship Program, a LINCC program) and workshops.
- eligibility to host a prize postdoctoral fellow (LSSTC Catalyst Fellow, a LINCC program).
- eligibility to request grants to support LSST-related science, including funding from our undergraduate summer student program.
- access to a diverse ecosystem for students and postdocs to network within, including opportunities for visible leadership roles in LSSTC.

Influence and Visibility - Member institutions leverage LSSTC’s pioneering work for their own interests, such as:
- having a guiding hand in designing LSSTC programs to align with your scientific and institutional priorities.
- demonstrating to prospective faculty and students that your institution and department are committed to a leadership role in the era of astronomical big data.
- participating in establishing a model for the role that private funding can play in multiplying the scientific impact of federal-investment in a $1B-scale scientific facility.

Community - Our member community shares values and deep connections to all aspects of Rubin’s LSST. For example, members:
- participate in a like-minded community of scholars that is committed to inclusive and diverse engagement in LSST scientific discovery.
- are embedded in a community of experts with the most up-to-date information about the status of Rubin LSST and the LSST Science Collaborations.
- are invited to contribute to STEM inclusion through a new Expansion Partners program that comes with financial resources. LSSTC Expansion Partners will be recognized as leaders in community building and inclusion.
LSSTC Membership Categories

(a) Single institutions (often R1 universities - 2021 Carnegie listing - or equivalently active research labs)

(b) Consortia
- a group of small schools, none of which are R1 research universities
- a network of already-associated (e.g. by country or State) R1 or equivalent institutions
- a mix of the two

For both categories of membership

● Membership dues come in increments, where a single R1 institution (or equivalent) will be expected to pay 1 increment. Those increments were $25k in 2022 (and can be subject to annual increases.)

● Consortia of R1 or equivalent institutions are required to pay membership dues in integer multiples of increments. For consortia, the dues will be determined by the number of institutions and number of faculty actively involved in Rubin science. The amount is agreed at the application stage through conversations with the LSSTC Executive Board and Chief Executive Officer.

Current consortia (institutions or country-wide memberships) will maintain their current increment level for dues (e.g. INAF and LineA).

Membership Fee structure

● The $75k catch-up costs are permanently waived

● Annual dues will gradually increase to $30k USD. 2023 annual dues are $26k USD, and will increase $1k/year through 2027 for all institutions - current and new.

● For equitable distribution of resources among different types of members, for every membership dues increment (currently $26k) there is:
  ○ 1 vote for Executive Board membership
  ○ 1 possible slot for a host a Catalyst Fellow (diversity of location cohort remains a factor in offers.)
  ○ 1 member representative at face-to-face and monthly Institutional Board meetings.
Expansion Partnership Program for LSSTC Institutional Membership

A membership opportunity designed to position a diverse community of researchers to participate in discoveries with the Legacy Survey of Space and Time.

An Expansion Partnership is a partnership between two institutions (or consortia), that is intended to expand participation in LSST science. A paying LSSTC member institution may choose to Sponsor an Affiliate institution to bring a diversity of perspectives into the LSSTC community. The Sponsor and Affiliate are both institutional members of LSSTC, and each has their own representation on the Institutional Board.

- An Expansion Sponsor acts as an anchor for the inclusion of the Expansion Affiliate institution (or consortium) in LSSTC membership.
- An Expansion Affiliate is an institution (or consortium) where membership dues represent an insurmountable barrier to joining LSSTC, and their inclusion would diversify the voices in the LSSTC community. Examples may include small, underrepresented, or under-resourced institutions.

Guidelines

- An Expansion Partnership incurs no membership dues beyond those agreed for the sponsor’s own institutional membership.
- An Expansion Sponsor will:
  - Work actively to include the Expansion Affiliate in their astronomical community and to integrate them into the LSSTC Institutional Board (IB)
  - Be publicly recognized as an Expansion Sponsor, for example on the LSSTC website
- An Expansion Affiliate will:
  - Have full access to LSSTC member benefits, including voting for members of the Board of Directors (one vote per Expansion Affiliate);
  - Commit to participating in the LSSTC community, for example by:
    - Designating one representative to join the IB and attend an annual face-to-face (hybrid) meeting
    - Serving on committees
    - Participating in program development and implementation
    - Standing for Executive Board positions
  - Have the opportunity to request LSSTC support for individuals to fulfill these roles if needed.
- For Expansion Partners:
  - A Catalyst Fellow at either the Sponsor or Affiliate is counted against the total tally - there can only be one Fellow hosted per dues increment paid ($26K/year in 2023).
Examples of Benefits

For Expansion Sponsors
- Concrete and direct contribution to inclusive participation in STEM
- Recognition as a leader in community building and inclusion
- Opportunity to pursue support for membership costs from individuals or funding organizations that prioritize unique and low-cost approaches to building regional connections, building community, and/or increasing inclusive participation in STEM.

For Expansion Affiliates
- Inclusion in LSSTC governance via an Institutional Board seat
- Integration in a network of larger institutions
- Active engagement in opportunities to propose, design, and benefit from programs that match their needs
- Access to funding and resources that are prioritized for institutional members
- Increased institutional visibility among an international coalition of LSSTC members

Application Process

- Potential Expansion Partners should apply to join LSSTC by:
  - applying for expansion status for the affiliate institution
  - writing a brief proposal explaining the benefits of the partnership itself, and the expected involvement of the affiliate institution in LSSTC.
- In consultation with the Membership Committee, recommendations on Expansion Partners will be made to the Executive Board by LSSTC’s Chief Executive Officer. The Executive Board must approve all requests for Expansion Affiliate status and for Institutional membership.

Reporting and Evaluation

- Expansion Partners will write an annual 1-page summary of:
  - the actions taken to solidify their partnership
  - the involvement of the Expansion Affiliate in LSSTC activities.
- The reports will be collected and evaluated by the Membership Committee, who will present a summary to the Executive Board each Fall.