Korean Rubin Science Collaboration (KRSC)



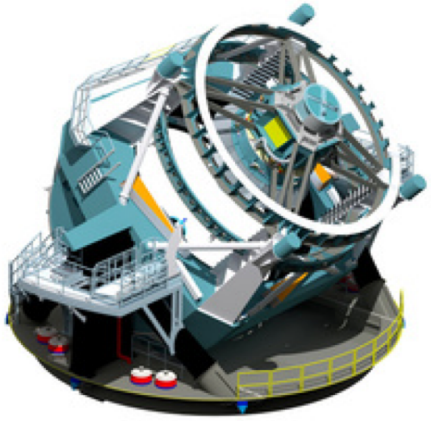
Narae Hwang (KASI)

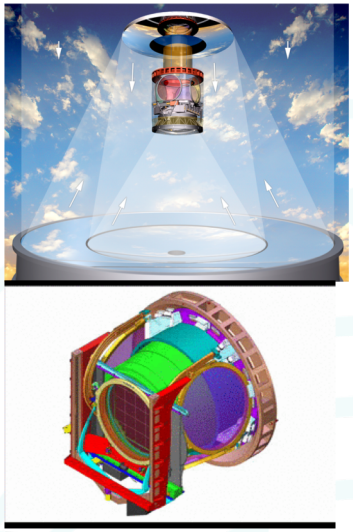
On behalf of
KRSC Management Team & KASI Rubin In-kind Contribution Team

2024.01.29.
Survey Science Group Workshop 2024, High-1 Resort

Rubin/LSST Overview

- **'LSST': Legacy Survey of Space and Time by Vera C. Rubin Observatory**





- **Telescope (Simonyi Survey Telescope)**
  - 8.4 m 3-Mirror Telescope (equiv. aperture 6.5 m)
  - FOV = 3.5 degree in diameter
- **Camera**
  - 3.2 Gpx CCD Camera (10um pixel, 0.2 arcsec/px)
  - Filter Set = ugrizy
- **Observation**
  - Data = 20 TB/nt (20 PB for 10 yrs; 60PB raw data)
  - Nightly Pipeline = Alert transient events within 60 seconds of image readout
  - Data Release Pipeline = release completely analyzed data set once per year
- **Site**
  - Cerro Pachon, Chile
- **Project (survey) period**
  - Project Period = 10+ years after commissioning



Rubin/LSST Schedule

- Ship LSSTCam around end of March/Early April
- First on-sky photon w/ ComCam – 2024 July
- LSSTCam installation on TMA – 2024 Oct
- LSSTCam first on-sky photon – 2024 Dec
- Rubin system first light w/ LSSTCam – 2025 Jan
- LSST start – late 2025
- Data Preview 1 (small example dataset) – early 2025
- Data Preview 2 (science-quality data from commissioning)– late 25/early 26
- Data Release 1 – about 1 year after LSST start (late 26)

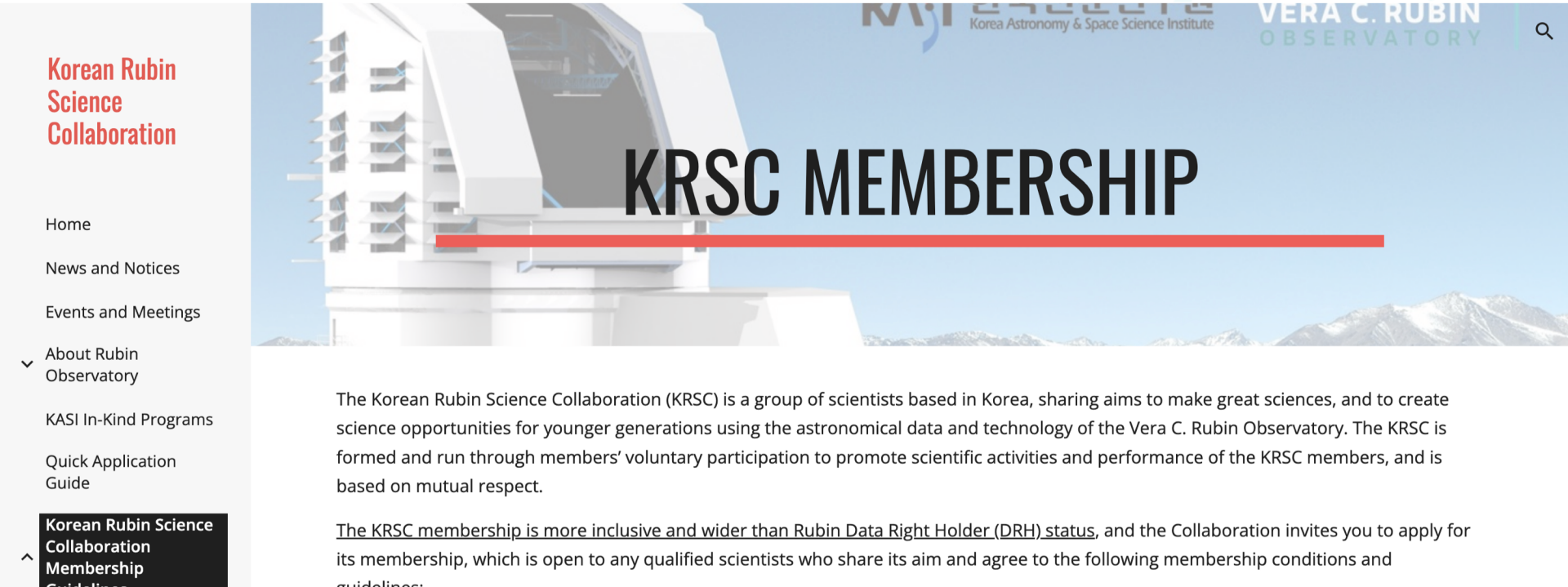
Korean Rubin Science Collaboration (KRSC)

- KRSC is a “broad network of scientists in Korea who have plans for Rubin/LSST science for NOW and for the FUTURE”.



Korean Rubin Science Collaboration (KRSC)

- KRSC members may include
  - Active/Past Rubin PI/JA data right holders (DRH)
  - Prospect scientists/students who aspire to have Rubin DRH status
  - Scientists/students who have plans to use (future) public Rubin/LSST data
  - Etc.
- (as of Jan 28, 2024) about 82 members



Merits of Employing KRSC system

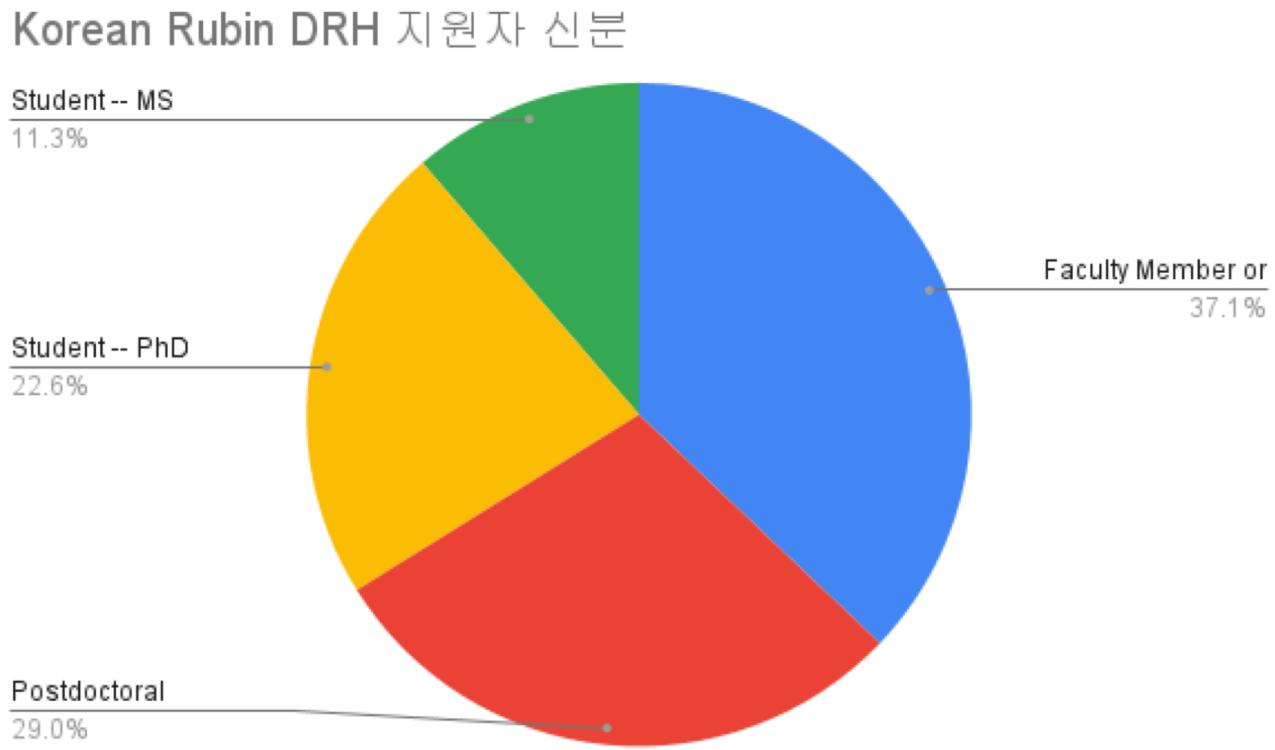
- Best use of limited Rubin Data Access Rights
  - Korean DRH is size limited but the Collaboration that includes DRH scientists can be much larger than this
- Flexible response to the evolving status of Korean Rubin Data User over 10+years of LSST lifetime
  - Set term for each DRH and make it renewable at a certain interval
- System for Collective Support of Junior scientists with limited Rubin Data Access Rights
- Keep track of (almost) real time Rubin/LSST science demands

Merits of Employing KRSC system

- Good justification for KASI project funding for Rubin/LSST
- May provide a framework for other institutes in Korea to chip in and contribute to Rubin in-kind contributions (TBD; needs further considerations)
- Provides a clear way to apply for Rubin DRH in Korea
  - KASI makes Data Right Agreements with AURA/NSF and SLAC/DOE
  - KRSC members as group of scientists who understand the condition of Rubin data access and agree to the conditions

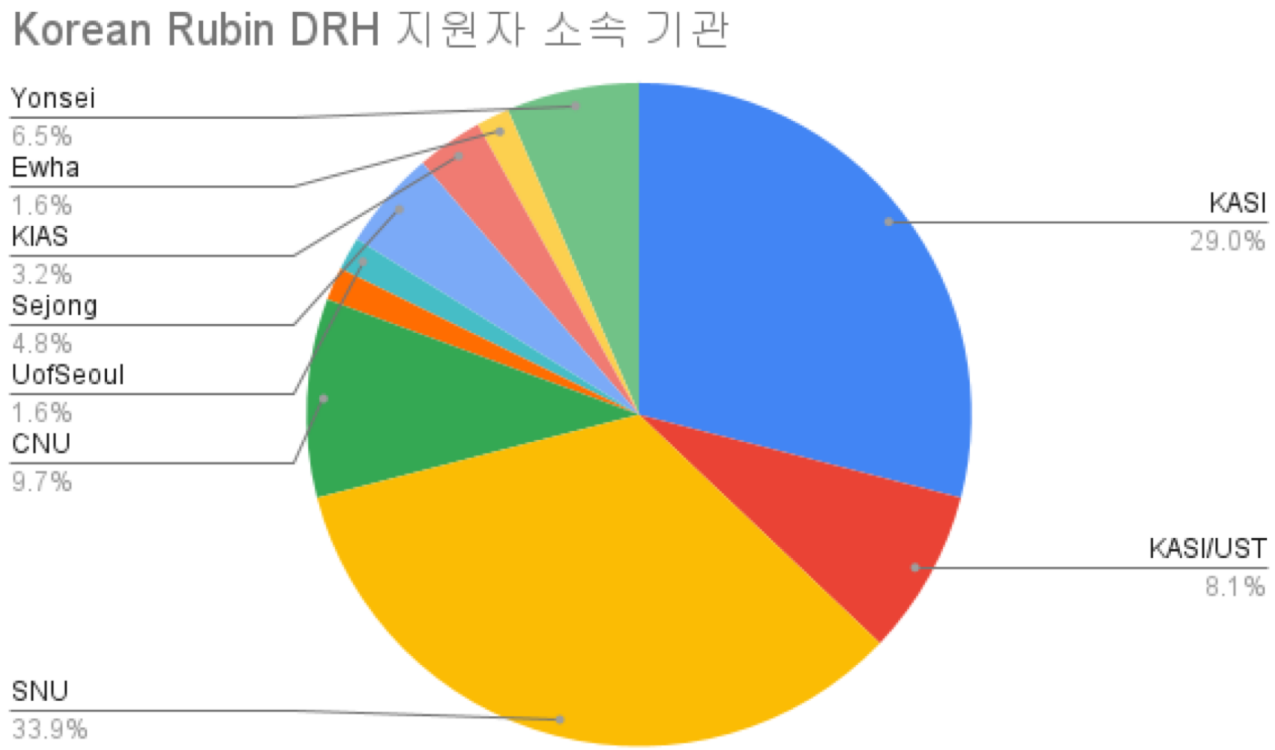
Proposal for Korean Rubin DRH

- Call for Proposal (2023/09/22 – 2023/11/17)
- Proposal received (61 total; 22 PI proposals and 39 JA proposals)



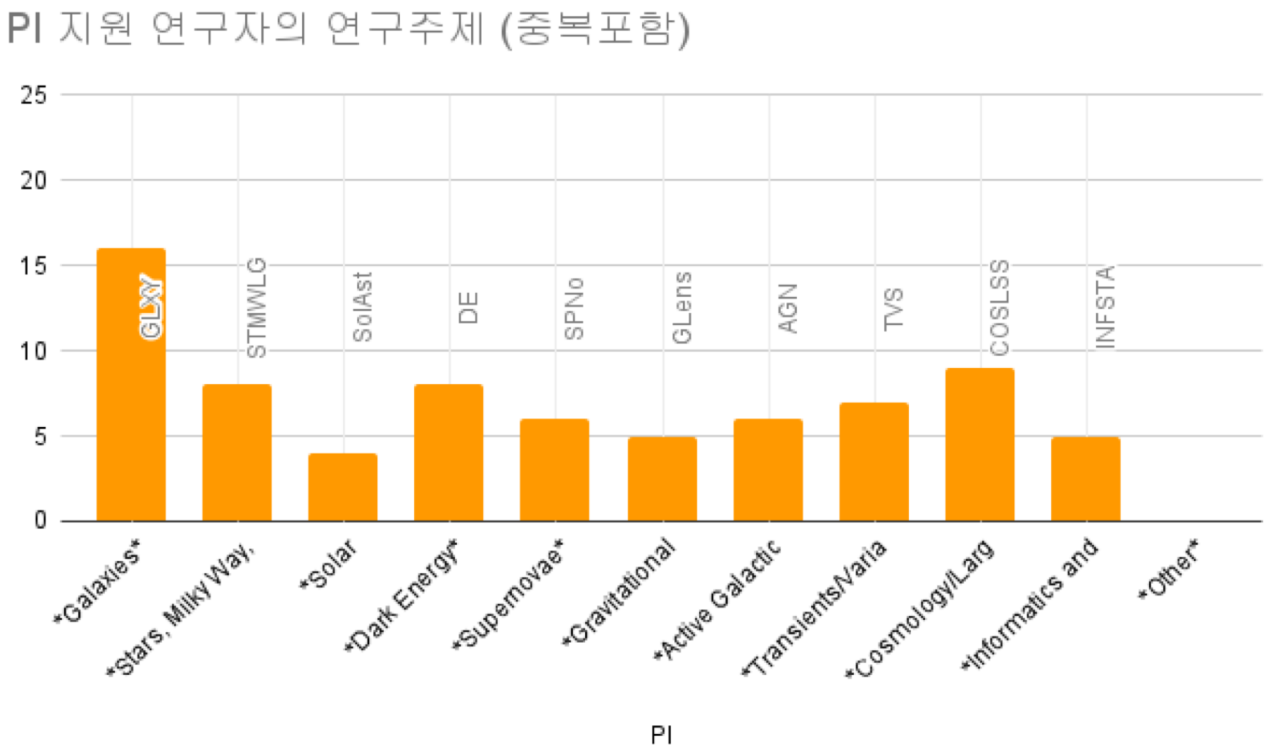
Proposal for Korean Rubin DRH

- Call for Proposal (2023/09/22 – 2023/11/17)
- Proposal received (61 total; 22 PI proposals and 39 JA proposals)



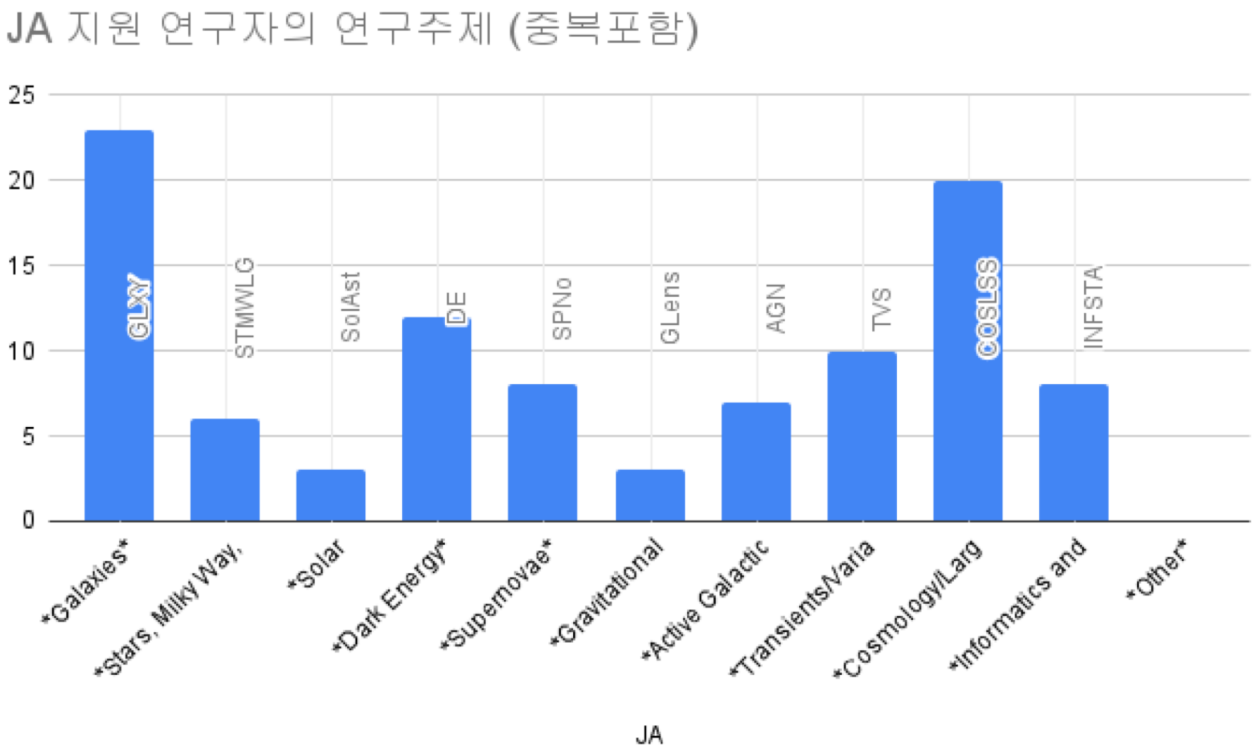
Proposal for Korean Rubin DRH

- Call for Proposal (2023/09/22 – 2023/11/17)
- Proposal received (61 total; 22 PI proposals and 39 JA proposals)



Proposal for Korean Rubin DRH

- Call for Proposal (2023/09/22 – 2023/11/17)
- Proposal received (61 total; 22 PI proposals and 39 JA proposals)

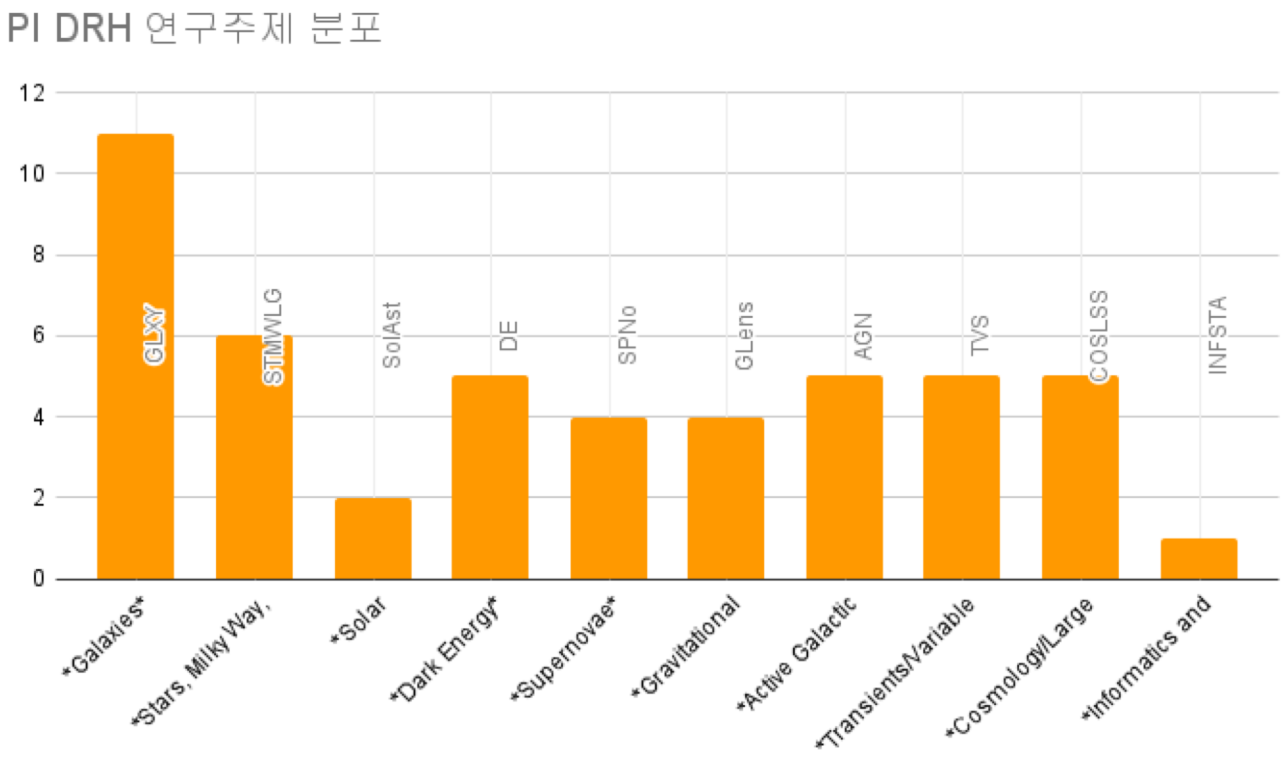


Proposal Review Results

- Rubin DRH Proposal Review Committee (Chair: Myungkook James Jee)
- Review for PI proposals and JA proposals in 2023 Dec & 2024 Jan.
- Proposals were reviewed based on
  - Scientific merits & Feasibility
  - Broad Impact
  - Proposer's expertise
  - Contribution to In-kind Program
  - Contribution (or plan of) to KRSC
- Based on consultation of KASI Rubin in-kind contribution team and the Review Committee, 14 PI proposals were selected
- The Review Committee recommended to award JA DRH status to as many proposers as possible
- Currently PI & JA match process in progress

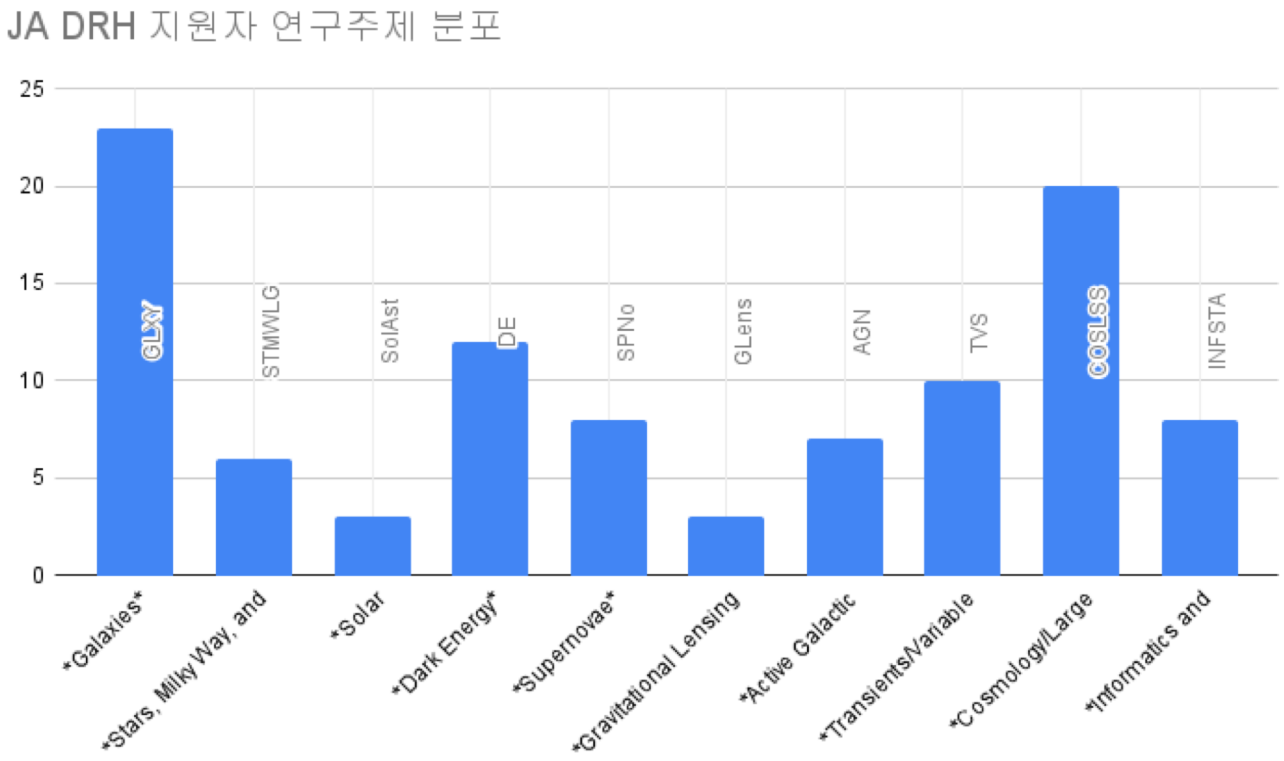
Proposal Review Results

- Selected PI Proposers' – Research interests



Proposal Review Results

- JA Proposers' – Research interests
  - The distribution does not necessarily match that of PI Proposers'



Proposal Review Results

- The Review Committee made a recommendation of possibly best PI-JA match
- But we understand that PI-JA match may be challenging
- Still hope that we can use KRSC spirit to support JA scientist collectively
  - As PI scientists, you can be flexible and generous to accept JA sponsorship
  - As JA scientists, you can be open to work with someone new and to learn new things or to do your research in a new way

- The process in progress and expect to hear from KRSC soon regarding your PI/JA match recommendation.

Term of 1st Rubin DRH & Next Call for Proposal(s)

- Term of 1st Korean Rubin DRH
  - Will be good to 2026/July/31 (subject to change)
  - Good enough to access DP0.2, and to participate in any pre-commissioning activities
  - Note:
    - LSST start – late 2025
    - Data Preview 1 (small example dataset) – early 2025
    - Data Preview 2 (science-quality data from commissioning)– late 25/early 26
    - Data Release 1 – about 1 year after LSST start (late 26)

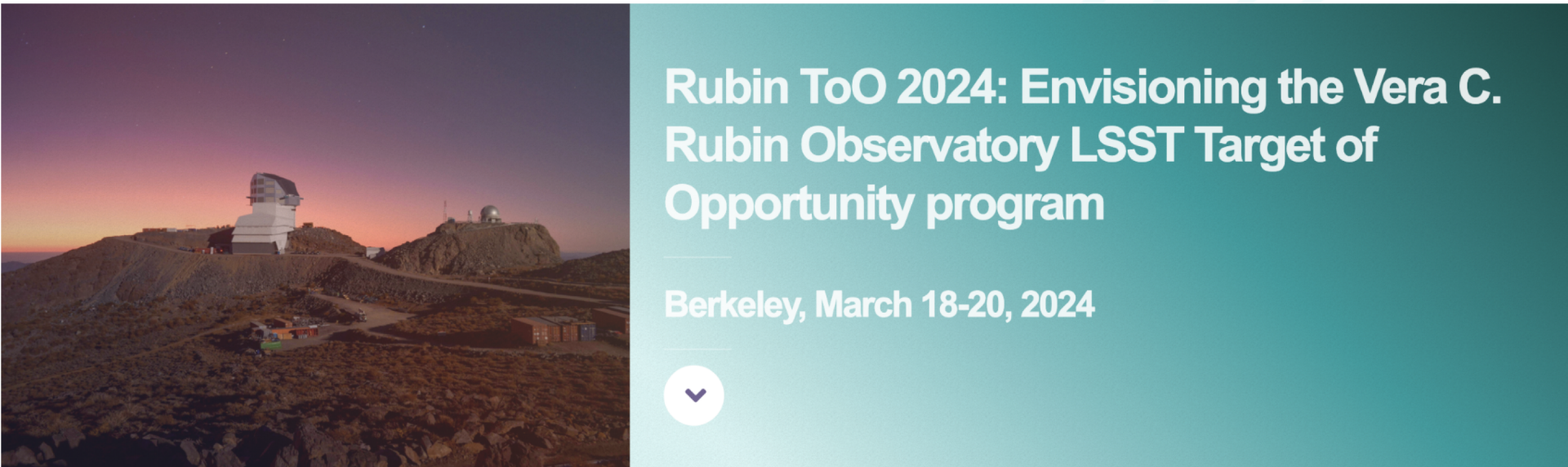
- The 2nd Korean Rubin DRH Call for Proposal will be open around 3-4 months before the end of 1st Rubin DRH term.

- Additional JA proposal call for available JA slots to be out in around Jul-Aug 2024 (TBC)
  - Term of this JA proposers' DRH status will be also good to 2026/July/31

Things to Come in 2024

- Announcement of 1st Rubin DRH selection result (early Feb, TBC)
- Announcement of the KASI-KIPAC Fellowship selection (Feb-Mar, TBC)
- KRSC (all-hands) meeting to discuss science activities (TBC)
- Additional JA proposal call (Jul-Aug 2024, TBC)
- Etc.

- Rubin ToO Workshop (https://lssttooworkshop.github.io/, remote attendance is available)



Join KRSC and Join Collaboration

- You are welcome to join KRSC, and propose/suggest what to do, and lead!
- Please stay tuned - https://sites.google.com/view/koreanrubinscience/home



Thank you

Korean PI Data Right Holder (DRH)

- **Eligibility of DRH (based on DRA SOW)**
  - **PI's are KASI affiliated scientists**
  - **JA's can be affiliated with different institutes (up to 4 JA's per each PI)**
- List is available from https://www.lsst.org/scientists/international-drh-list
- Regular update on DRH -- once per year, but update may happen as needed
  - Last update to KOR-KAS DRH list in September 2022
- [Note] Rubin Policy: PI data right holders can be changed and updated at the discretion of each In-kind contribution team
- [Note] Grace Period: When you undergoes affiliation change and are not covered by KASI In-kind program, then you may have two years of Grace Period (GR). However, Grace Periods are contingent upon the aforesaid relocation being to an institution that is eligible to host researchers with Rubin data rights.

Applying for Korean DRH Status

- PI 자격 연구자에게 KASI 소속이 필요한 이유
  Why KASI affiliation for PI status?
  - KASI is a STAKEHOLDER in the DRA contracts w/ SLAC/DOE and AURA/NSF
  - Under DRA, it is dictated as below:
    “AURA (or SLAC) and KASI have a mutual interest in maximizing the scientific exploitation of the LSST data. **This can be achieved in part by enlarging the LSST science community to include scientists affiliated with KASI**, while the in-kind contributions made by KASI will expand the resources available to US astronomical and HEP communities.”

- JA 자격 연구자의 경우 KASI 소속 제한 없음
  But for JA status, no such restriction
  - PI and JA scientists may have different affiliations, but they have to work together and PI is supposed to supervise JA scientist(s).

Extend the Reach and Expand the Gain

- KASI 방문연구원 제도를 이용해 KASI 소속 연구자로 Rubin PI 연구활동 가능함
  Invitation to KAS community members to join KRSC and to apply for DRH PI status under the condition that s/he agrees to obtain KASI affiliation, and does science activities with KASI affiliation
- Return: your students and postdocs can enjoy JA status and use Rubin/LSST data for their thesis/research under your supervision
  - JA candidates still have to apply and submit proposals

- Go ahead and apply for your DRH status at https://sites.google.com/view/koreanrubinscience/korean-rubin-drh-status



Questions?