



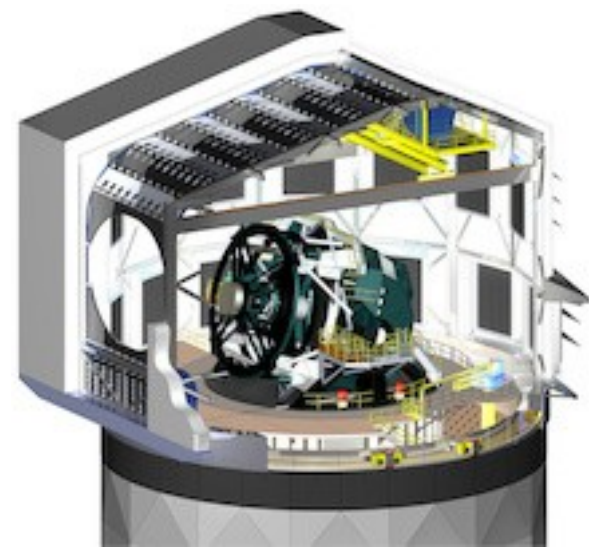
# Status of LSST@PL - overview and future plans and other

Agnieszka Pollo  
NCBJ (& UJ)

Warszawa, 23.10.2024

# (Astronomically) Big Data of near future: Vera Rubin Observatory

- Legacy Survey of Space and Time (LSST)  
conducted at the Vera Rubin Observatory  
with the Simonyi Survey Telescope



# (Astronomically) Big Data of near future: Vera Rubin Observatory

- Legacy Survey of Space and Time (LSST)
  - Deep and wide survey in time domain
  - mirror 8.4-m; 3200 megapixel camera

- **37 bln** stars and galaxies

- 20B galaxies

- 17B resolved stars

- 6M orbits of solar system bodies

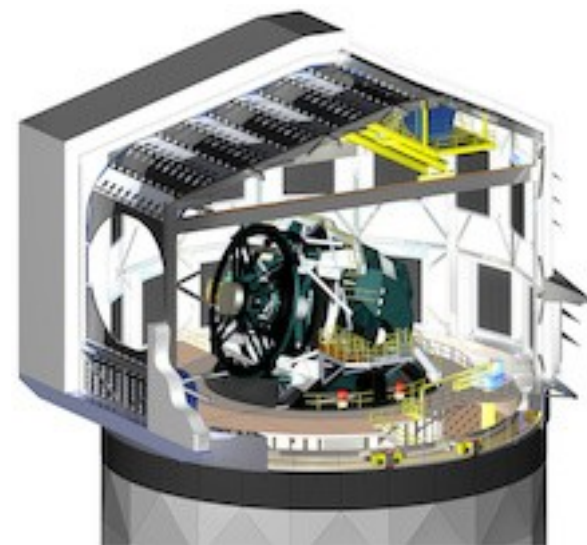
Average number of alerts per night: about 10 million

- 10-years long sky survey

- **15-30 TB of data**  
**(all SDSS) per night**

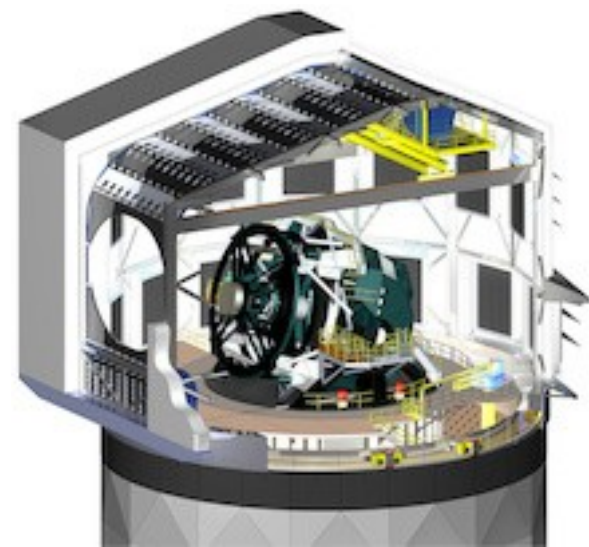
- After 10 years:

- ~200 PB of data**



# (Astronomically) Big Data of near future: Vera Rubin Observatory

first light expected in mid-next year (2025)

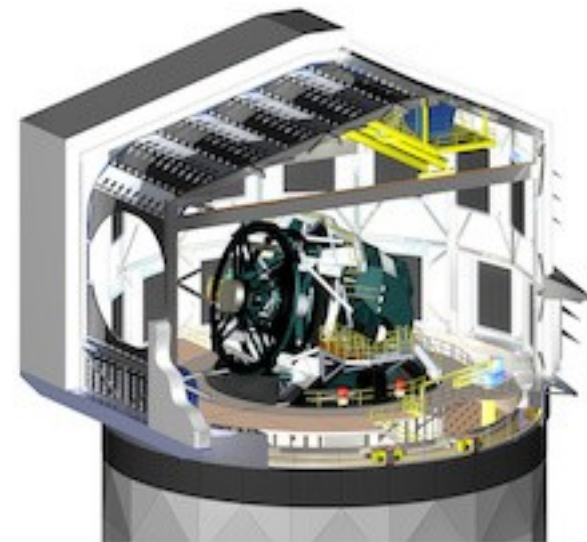




# LSST

## *Politics: basics*

- large survey telescope in Chile
- US project funded by US funding agencies  
+ private funds  
+ “international contributors” (us)



# LSST@PL:

## early history of data rights politics

- around 2010 – discussions started
- 2018: **LSST@PL** consortium agreement signed (NCBJ, CFT PAN, CAMK PAN, UMK; UW joined later, UW r and UAM – process ongoing)
- 2018: MoA with LSST: fee per PI (+4 co-Is per PI). 4 Pis.
- 2018: application to Polish Ministry of Higher Education to cover the fee for 5 years – successful
- → grant 2019-2023
- 2019: LSST introduced to Polish Map of Scientific Infrastructure
- March 2019 – global change of the model of international participation (fee → in-kind contribution)

# LSST@PL: history of data rights politics

- Nov 2019 – in-kind intention letter
- Oct 2020 – in-kind proposal submitted with 6 main points (S1: IDAC; S2: IDAC and DESC related software development effort; S3-S6: science-related for DESC, Galaxies, AGN SCs)
- March 2021 – preliminary approval by DOE i NSF
- 31.03.2021 – in-kind proposal submitted
- II half 2021 – accepted by LSST
- fall 2022 –decision: our MoA will be handled by SLAC National Accelerator Laboratory – new MoA between NCBJ (representing **LSST@PL**) and SLAC (representing DOE)
- 08.2023 – first draft of the MoA received, the process on-going
- 12.2023: Polish grant ended (no prolongation possible)
- 08.2024 - 2<sup>nd</sup> iteration of the MoA received, the process on-going...

# LSST

## Participation rules

- (talk to Pawel Pietrukowicz's talk for more details)
- In-kind contribution in exchange for a given number of “data right holders” (“a unit” = 1 “senior PI” and 4 “junior co-Is”, **not necessarily related** to “senior PIs” any more)
- LSST-PL consortium (present) – NCBJ (coordinating), CAMK PAN, CFT PAN, UMK, UJ, UW + Uwr, UAM
- 18 PIs (all slots taken!), 72 Junior Associate (JA) slots (50 taken!)
- A list updated +/- once per year



# LSST@PL:

## near future of data rights politics

- Very soon - new call for Polish Roadmap for Scientific Infrastructure expected, possibly with the deadline at the end of the year – need to re-apply
- Finalization of the MoA – asap (now waiting for the next version from SLAC)
- Re-apply for ministerial grant to cover as much in-kind as possible – possible only after finalization of the MoA - this can cover hardware and technical support, NOT science
- Revision (amendments?) of the Polish consortium agreement, as the present one was not well adopted to the in-kind model.
  - amendments:
    - new members (UWr and UAM)
    - new structure of the council (reflecting the effort to provide the in-kind contribution rather than geographical structure)
- Council(s) to manage and supervise PI/JA slot distribution, science plans and reports, other needs of the consortium (proposals, contributions to the in-kind sub-tasks etc.) – TBD
- At present, the LSST in-kind program is closed – possible openings (or expansion of our present contribution) in the future – unclear now, to be monitored

# LSST@PL: near future plans

- Roadmap application
- Grant application(s) for common activities – NCN OPUS?
- next
- yearly **LSST@PL** meetings – organized by different institutions, in different places? Who's next?
- **LSST@Europe** 2025 in Poland (Poznan) – more at the end of the conference

# LSST in-kind (substantial changes not likely, small modifications possible)

- PI: Agnieszka Pollo (NCBJ & UJ) // Project Manager: dr hab. Paweł Piertrukowicz (UW)
- Six main points:
  - S1. “Lite IDAC” - Independent Data Access Center (CL: dr Adam Zdrożny, NCBJ → dr Krzysztof Nawrocki, NCBJ)
  - S2. “Near-Term Directable computing infrastructure effort for Dark Energy Science Collaboration providing a link between the NCBJ Lite IDAC, the NCBJ computing resources and the DESC computing infrastructure” (CL: dr Adam Zdrożny, NCBJ → dr Krzysztof Nawrocki, NCBJ) (3x1.5 FTE)
  - S3. Science Pipeline Development in the LSST Galaxies Science Collaboration (3x0.5 FTE) (CL: dr hab Katarzyna Małek, NCBJ)
  - S4. Science Pipeline Development in the LSST Dark Energy Science Collaboration (3x1FTE) (CL: dr hab Maciej Bilicki, CFT PAN)
  - S5. Science Pipeline Development in the LSST Dark Energy Science Collaboration (2x0.5 FTE) (CL: dr hab Wojciech Hellwing, CFT PAN) → possibly incorporated into S2
  - S6. Science Pipeline Development in the LSST AGN Collaboration (3x0.5 FTE) (CL: prof. Bożena Czerny, CFT PAN)

# IDAC - advantages

- Easier data access to the LSST data for local users
- Easier distribution and promotion of “secondary data products” created in Poland
- Possible point of cross-correlation with data other projects → multiwavelength astronomy center?
- New type of database philosophy in astronomy – still in development
- Now: still gathering “science cases” for our IDAC, what is yours? Are you ready to test it on our present IDAC settings? If so, talk to Krzysztof Nawrocki!
- Missing: MoA which would allow to unblock funding already attributed and apply for the next grant

# LSST@PL

- Great to see you here and let's try together to make it working – looking forward to all the presentations these 2 days!