



LSST:UK Press release

For immediate release

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Lights, camera, cosmos: UK scientists help write the script for the greatest movie of our time



The NSF–DOE Vera C. Rubin Observatory’s Legacy Survey of Space and Time has begun and UK scientists are pushing every frame of this cosmic movie to be more wondrous and vivid than we’ve ever seen.

Today, 30 June 2026, UK astronomers are celebrating the launch of the Rubin Legacy Survey of Space and Time (LSST) which began last night from a mountaintop in Chile. A milestone that the UK astronomy community has spent more than a decade preparing for, it’s the start of one of the most ambitious studies of the cosmos ever undertaken.

For the next ten years, the LSST will capture the entire southern sky to create an ultra-wide, ultra-high-definition time-lapse record of our Universe. This movie will help us solve some of the

Universe's biggest mysteries – such as the nature of dark energy, and the evolution of the solar system, Milky Way, and galaxies across cosmic time.

As a major international partner of the US-led Rubin Observatory, UK's involvement is facilitated through a multi-million-pound investment by the Science and Technology Facilities Council (STFC). Formed in 2014, the [LSST:UK Consortium](#) is made up of 36 partner institutions representing all major UK astronomy research groups. Researchers and software developers across the UK are addressing scientific and technical challenges posed by this revolutionary observatory.

Enhancing our understanding of the Universe

As part of the UK contribution, key innovations are expanding the scientific reach of the LSST. At the University of Southampton, a team of astronomers has developed image-processing software that will uncover the kinds of distant and dust-shrouded galaxies and black holes that might be missed using LSST data alone.

Professor Manda Banerji, Professor of Astrophysics at the University of Southampton, leads a team that will fuse together Rubin data with infrared data from the Visible and Infrared Survey Telescope for Astronomy (VISTA) to allow some of the most distant galaxies and black holes to be found.

She said: "Distant objects slip out of the visible spectrum into the infrared, which means lots of exciting astronomical phenomena are not picked up in optical surveys such as LSST. Objects covered in dust that often appear faintly in optical surveys are also detected in the infrared." The software being developed by the Southampton team will be available to the public, allowing any astronomer, professional or amateur, to process data from their preferred telescope or camera through the LSST data-processing pipeline.

Professor Sugata Kaviraj, Professor of Astrophysics at the University of Hertfordshire, has led an innovation with Liverpool John Moores University that will significantly enhance LSST's ability to study the evolution of the observable Universe. The work focuses on data analysis in the low surface brightness (LSB) regime – those astronomical objects or regions that are extremely faint and largely undetectable in past surveys. The team has built software that makes the Rubin data-processing pipeline sensitive to images containing faint, diffuse light and provides the means to correctly process and catalogue them for use by the global community.

He said: "By enabling access to the LSB regime, we have significantly boosted the science potential of the LSST, enabling scientists to study how galaxies and galaxy clusters actually grow and assemble. Our present understanding of galaxies is the tip of the iceberg; the low surface brightness (LSB) regime contains more material than the bright regime and has barely been explored."

Dr Tom J. Wilson is a Senior Research Fellow at the University of Exeter who has developed software that uses advanced algorithms to identify reliable counterparts to Rubin images created by existing surveys. By cross-matching different datasets, the software enhances the scientific capabilities of the LSST.

He said: "While the innovation focuses on crowded fields such as the Milky Way, with an eye to young star-forming regions and stellar clusters, it will also be a valuable tool for astronomers across the community, including those interested in galaxies, active galactic nuclei (AGN) and strong lensing.

"Now that the LSST has started, I'm keen to see how this software will enable science that we can't yet predict. One key area for discovery is where the Rubin image does not correlate with data from an existing survey. The potential for the community to find new classes of object is interesting."

A deluge of data

During its 10-year survey, Rubin will catalogue an estimated 17 billion stars, 20 billion galaxies, and millions of events that change in the sky – more objects than there are living people on earth. With the survey expected to create up to 500 petabytes of data in its lifetime, the UK is playing a significant role in the management and processing of this unprecedented dataset. The UK's LSST data facility will process 25% of the data from Rubin, turning raw images of the sky into the calibrated data products with which astronomers can do science, and will operate a science platform capable of supporting analysis of those data products by 20% of the international LSST community.

The UK's LSST computing facility also hosts the Lasair event broker, a sophisticated software system supporting the near-real-time analysis of the alerts that Rubin issues whenever it detects a moving or time-varying celestial source. This alert stream - which can comprise millions of alerts per night and which includes a wide range of astrophysical objects, from nearby asteroids to distant supernovae - started flowing in February, ahead of today's formal start of the 10-year LSST.

Professor Grahame Blair, Executive Director of Programmes at STFC, said:

"Today marks the beginning of a new era in astronomy. Together with our partners, UK scientists, engineers and software experts, STFC is excited to be part of one of the most ambitious scientific projects ever undertaken.

"The discoveries made over the next decade will inspire future generations, deepen our understanding of the cosmos, and reinforce the UK's position at the forefront of astronomical research."

Professor Bob Mann, Professor of Survey Astronomy at the University of Edinburgh, is the Project Leader for UK participation in the Rubin LSST: He said: *"Today marks the start of the*

10-year LSST, but it is more like the mid-point of our UK project. Researchers in the UK have been preparing for more than a decade for the data that is starting to flow today and the contributions we are making will enhance the science that can be done with it over the coming decade or more by astronomers around the world."

Professor Graham Smith, LSST:UK Project Scientist and Professor of Physics and Astronomy at the University of Birmingham said: *"The beginning of Rubin's LSST is a huge moment for everyone in the UK and around the world who is curious about how the universe works, and the fundamental laws of nature. This beautiful telescope and survey is 100 times more powerful for new discoveries than anything that has gone before, across the solar system, our own galaxy the Milky Way, galaxies and black holes in the distant universe, the most violent cosmic explosions, and mysteries such as dark matter and dark energy. I'm really excited to see what our early career researchers and students discover in the coming years with LSST data, and to share this with the public."*

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[Download the main image](#)

Caption

This 1.7-gigapixel image of a field of stars in the constellation Lupus showcases the unprecedented view of the Universe that NSF–DOE Vera C. Rubin Observatory gives us. Equipped with the LSST Camera — the largest digital camera in the world — Rubin combines a wide view of the sky with the ability to detect extremely faint objects. With this capability, Rubin can reveal details of the cosmos across an enormous range of scales, from distant galaxies, to individual stars, to the wispy clouds of dust spread throughout our galaxy.

The faint, glowing clouds spread across this image are galactic cirrus: clouds of interstellar gas and dust that can be seen in the foreground of the Milky Way. Rubin's ability to capture scenes like this in unmatched detail will open new windows into the structure of our galaxy and the Universe beyond it.

Credit:

NSF–DOE Vera C. Rubin Observatory/NOIRLab/SLAC/AURA

When the embargo lifts at 4pm (UK) on Tuesday 30 June, the full set of visuals will be available for download:

<https://rubinobservatory.org/news/action-rubin-lsst-begins>

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Other visual assets

- [Rubin Observatory main image gallery](#)
 - [First Look images and videos](#)
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Notes to editors

About LSST:UK

To date, UK participation in the Rubin LSST has been funded by £23 million of investment by the Science and Technology Facilities Council (STFC), part of UK Research and Innovation. Computational resources used by LSST:UK are provided through the STFC-funded [IRIS](#) project.

Formed in 2014, the [LSST:UK Consortium](#) is made up of 36 partners representing all major UK astronomy research groups*. The LSST:UK Consortium has created the LSST:UK Science Centre (LUSC), a distributed team of researchers and software developers addressing scientific and technical challenges that will enable astronomers to make discoveries within the multi-Petabyte dataset produced by LSST.

Full teams working on innovations mentioned in the press release:

The LSST-VISTA Fusion Dataset: Prof Manda Banerji, Dr Elham Saremi, Professor Richard McMahon (University of Cambridge), Dr Raphael Shirley (Max Planck Institute for Extraterrestrial Physics).

Critical infrastructure for low surface brightness science: Prof Sugata Kaviraj, Dr Aaron Watkins, Dr Tom Sedgwick (University of Hertfordshire), Prof Chris Collins (Liverpool John Moores University).

Cross-matching at LSST depths: Dr Tom J. Wilson, Prof Tim Naylor (University of Exeter).

*Armagh Observatory; Cardiff University; Durham University; Imperial College London; Keele University; Lancaster University; Liverpool John Moores University ; Newcastle University; Open University; Queen Mary University of London; Queen's University Belfast; University of Bath; University of Birmingham; University of Bristol; University of Cambridge; University of Lancashire; University of Edinburgh; University of Exeter; University of Glasgow; University of Hertfordshire; University of Hull; University of Kent; University of Leicester; University of Leeds; University of Manchester ; University of Nottingham; University of Oxford ; University of Portsmouth; University of St Andrews; University of Sheffield; University of Southampton; University of Surrey; University of Sussex; University of Warwick; University College London; UK Astronomy Technology Centre.

About the NSF–DOE Vera C. Rubin Observatory

The NSF–DOE Vera C. Rubin Observatory is jointly funded by the U.S. National Science Foundation and the U.S. Department of Energy’s Office of Science. Rubin Observatory is a joint Programme of NSF NOIRLab and DOE’s SLAC National Accelerator Laboratory.

Over the next ten years, Rubin will relentlessly observe the entire southern sky every few nights to create an ultra-wide, ultra-high-definition time-lapse record of our Universe. This long-awaited milestone is the culmination of years of effort by thousands of people around the world. It follows the celebratory Rubin First Look event that took place in June 2025, which was followed by final commissioning work, an operational readiness review, and the beginning of the alert stream.

This is the first time so much astronomical data will be available to so many people, opening the door to new kinds of discovery by both scientists and the public. Rubin invites anyone in the world to engage with its data and explore the dynamic Universe in ways never before possible.

- Visit rubinobservatory.org.
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