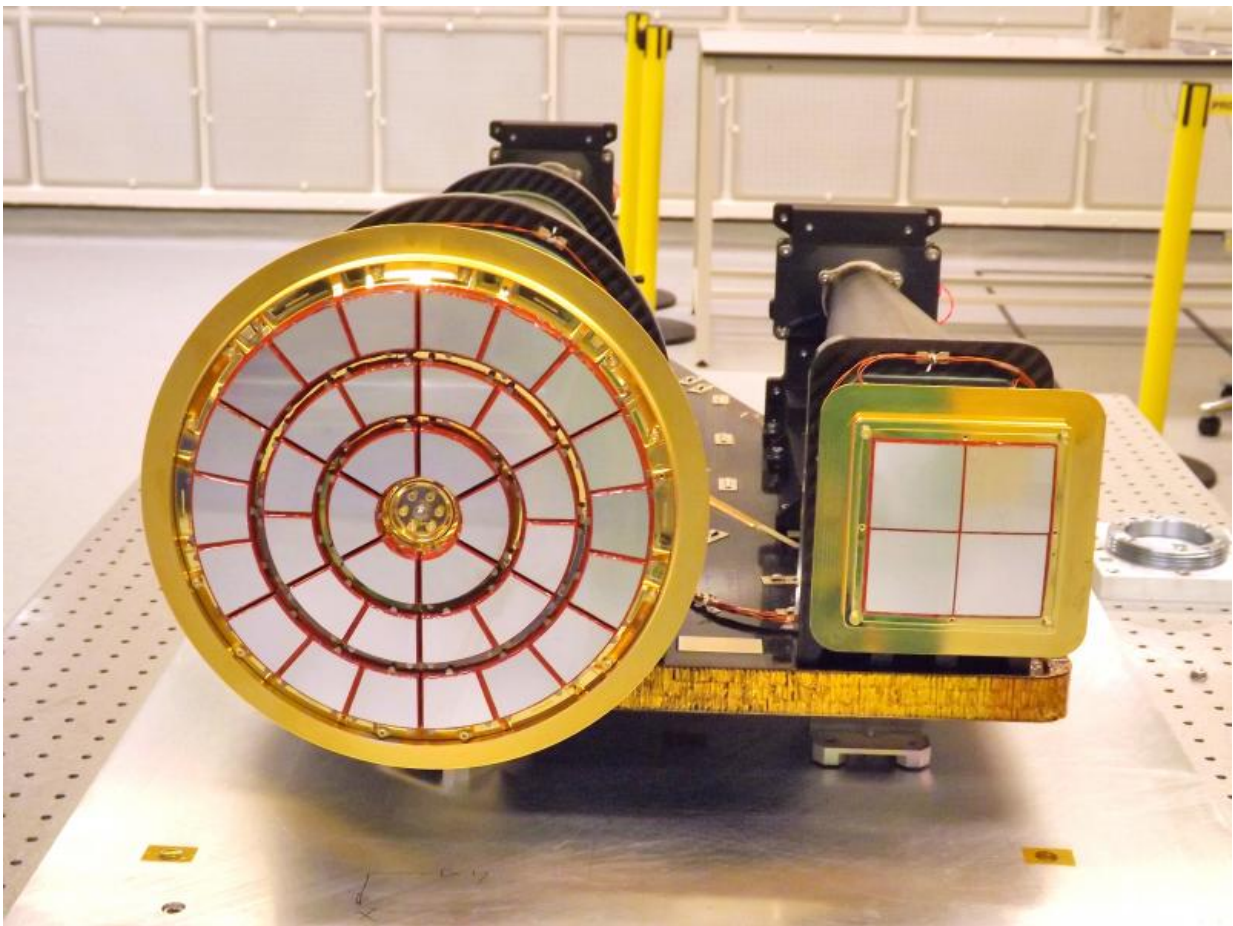


Lobster-inspired 3.8m super lightweight mirror chosen for Chinese-French space mission

October 26 2015



The MIXS Flight Model. Credit: University of Leicester

The University of Leicester announces today the signature of a contract to develop an innovative new type of X-ray mirror for a telescope to be flown on an orbiting observatory to be launched in 2021.

The Space Variable Objects Monitor (SVOM) is a joint Chinese-French satellite observatory. Designed to study the most powerful explosions in the Universe out to the era of the first generation of stars, SVOM will locate hundreds of [gamma-ray bursts](#) signifying the deaths of massive stars.

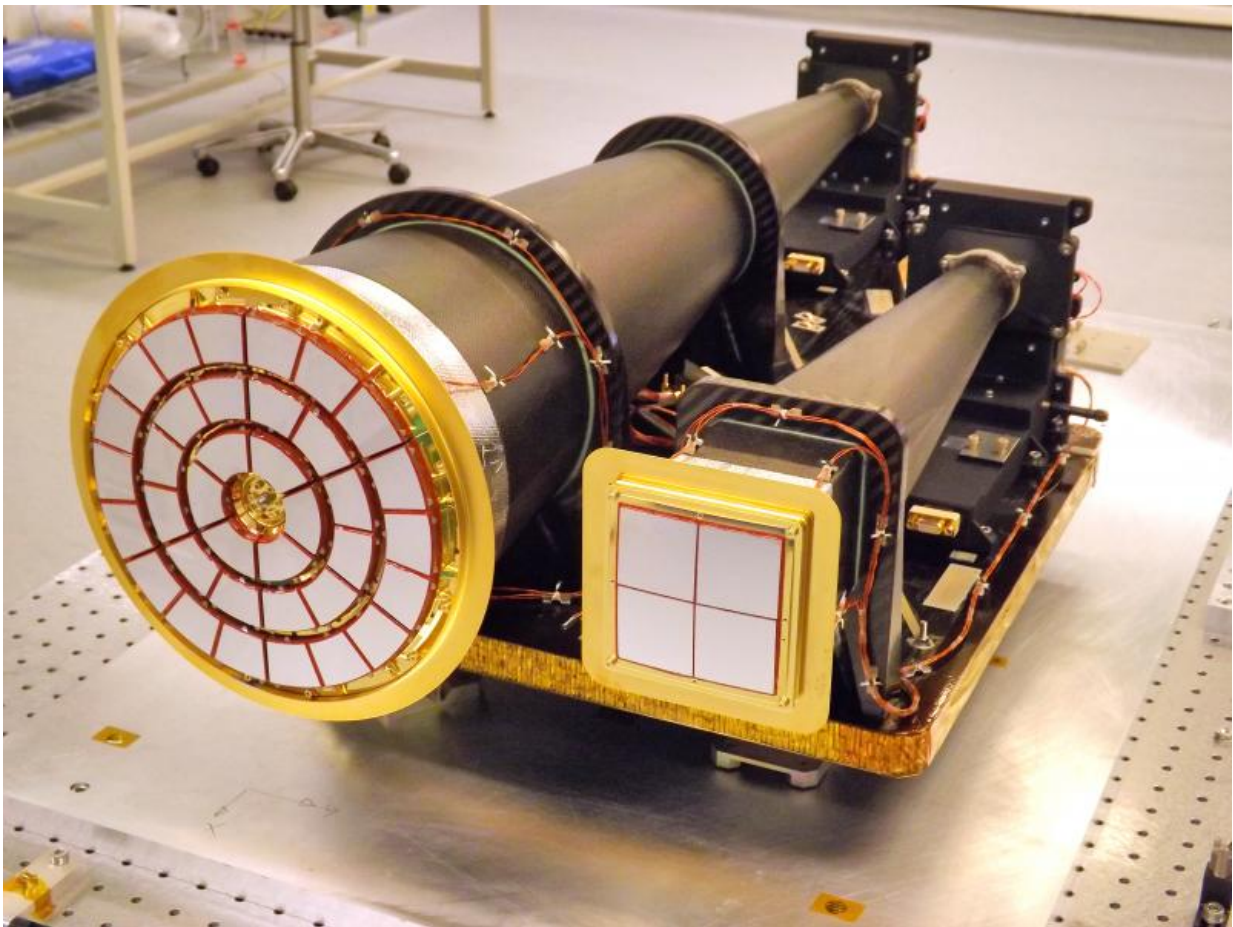
University of Leicester scientists with its Space Research Centre instrumentation and engineering staff in the Department of Physics and Astronomy have developed a unique capability to make a new kind of super-light-weight X-ray focussing optic.

Traditional X-ray mirrors for [space](#) telescopes are made of solid glass or metal and weigh tens of kilograms or more. The new 'Lobster' X-ray mirror for SVOM weighs just one kilo, and so is much easier to launch into orbit.

Professor Julian Osborne, who is leading this work at Leicester explained: "Lobsters and similar animals use reflecting mirrors to focus light in their eyes, unlike the lenses used by people. We can make man-made Lobster-type mirrors with the very high degree of smoothness needed to focus X-rays, and make them robust enough to survive the rigours of a rocket launch."

The Lobster X-ray optic derives from recent work by the Space Research Centre at the University in making a novel X-ray instrument to study the surface of the planet Mercury. This Mercury Imaging X-ray Spectrometer (MIXS) will be launched by the European Space Agency for its seven-year journey in 2017. Both MIXS and SVOM use square-pore micro-channel plate focussing units made from glass, although

MIXS has a more conventional optical design than the SVOM Lobster. Professor Mark Sims of the Space Research Centre said "The design, construction and test of such micro-channel plate optics have been studied by the Space Research Centre for over a decade."



The MIXS Flight Model. Credit: University of Leicester

The University of Leicester team has secured a contract from the French Space Agency, CNES, for the manufacture of a Lobster X-ray focussing optic for SVOM that has a value of £3.8M. The final version of the optic

to be launched will be delivered to CNES at the end of 2019.

SVOM will continue the work of finding gamma-ray bursts currently being done by the US/UK/Italian satellite Swift, which is now in the 11th year of its life. Scientists at the University have been making world-leading breakthroughs in the discoveries of gamma-ray bursts in the Swift era, and are looking forward to the new capabilities that SVOM will bring.

Head of Department, Professor Paul O'Brien, said: "SVOM will be launched at a very exciting time, when new ground-based observatories will enable us to learn more about these fascinating objects that will be located by SVOM. We will be working with our French and Chinese colleagues to continue to learn more about these vast explosions."

Provided by University of Leicester

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