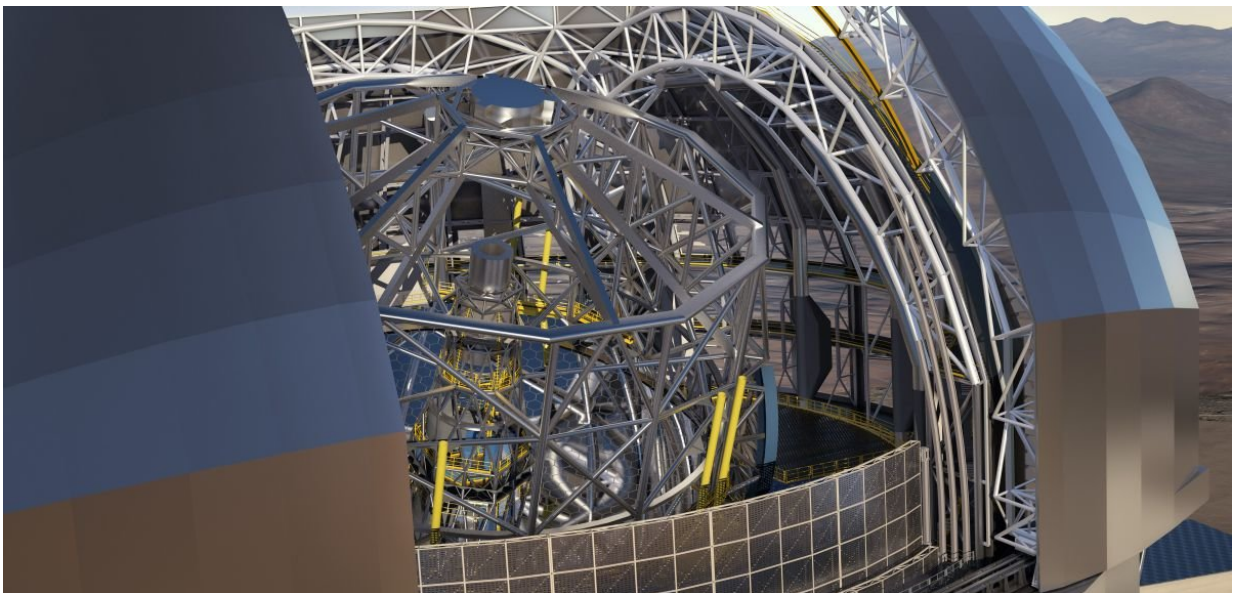


Latest step toward world's largest telescope that will observe 'first stars and galaxies ever formed'

December 21 2018



Extremely Large Telescope. Credit: ESO/L. Calçada/ACe Consortium

A cutting-edge instrument developed by scientists at the University of Oxford has passed critical tests and gained a powerful adaptive optics system.

Oxford engineers and scientists leading the project to build HARMONI, one of the first-light instruments for the Extremely Large Telescope

(ELT), are celebrating after it successfully completed the Preliminary Design Review process (PDR). By completing this vital step, the [instrument](#) can progress to the detailed design phase, aiming to be ready for remarkable observations of astronomical objects in the mid 2020's.

HARMONI—the High Angular Resolution Monolithic Optical and Near-infrared Integral field spectrograph—has been designed by a team led jointly by the University of Oxford and STFC's UK Astronomy Technology Centre. It will provide the European Southern Observatory (ESO)'s telescope with a sensitivity that is many hundreds of times better than any current telescope of its kind. The Review assessed the design of the instrument's optics, mechanics, software, and electronics, as well as its operational concepts.

Professor Niranjan Thatte from the University of Oxford's Department of Physics, who is leading on HARMONI, said: "HARMONI is a "work-horse" instrument and the spectrograph, equipped with an integral field capability, observes an astronomical target in 4000 different colours (wavelengths) simultaneously. Completing this review takes us all a big step closer to carrying out observations of a wide variety of astronomical objects, ranging from planets around [nearby stars](#), to the very first galaxies, and the very first stars ever formed."

Perched over 3,000 metres above sea level on top of Cerro Armazones in the Atacama Desert of northern Chile, the ELT will be the biggest optical telescope ever built and have a giant main mirror 39 metres in diameter. It is one of the first in a new class of massive astronomical instruments and will stand an impressive 8 metres tall, measure 10 metres long by 6 metres wide, and weigh in at a mighty 40 tonnes.

HARMONI is one of the biggest global science collaborations in history and includes an £88 million investment by the UK Government.

Professor Steven Balbus, Head of Astrophysics at the University of Oxford said: "The science potential of this incredible instrument is vast."

The University of Oxford is the lead institute for the HARMONI project and is home to the principal investigator, project manager, system engineer and instrument scientist.

Provided by University of Oxford

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