



ESO

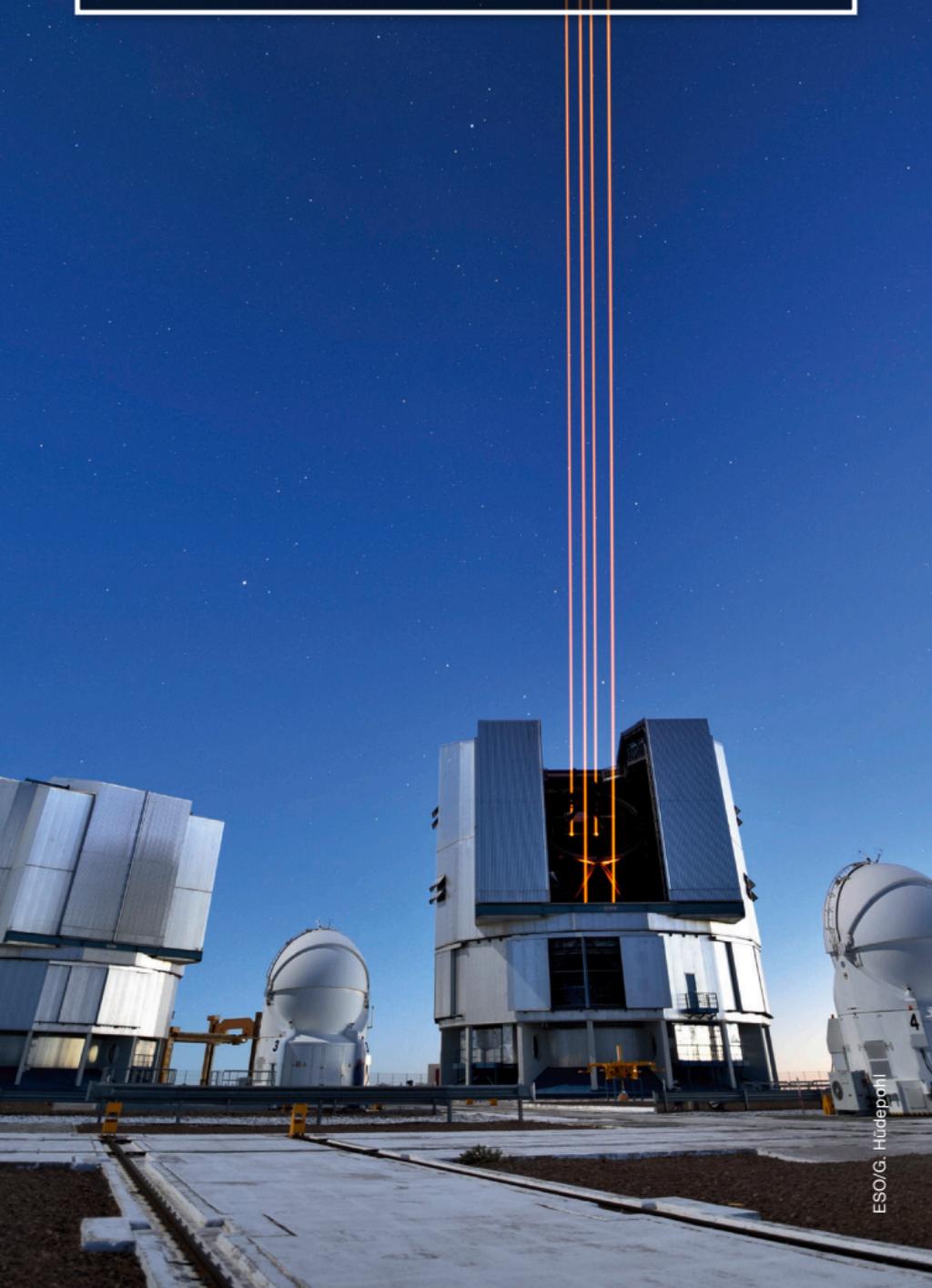
Reaching New Heights in Astronomy

Created in 1962, ESO, the European Southern Observatory, carries out an ambitious programme focused on the design, construction and operation of powerful ground-based observing facilities.

The Very Large Telescope

The World's Most Advanced Optical Instrument

With four Unit Telescopes, each with a main mirror 8.2 metres in diameter, and four movable 1.8-metre Auxiliary Telescopes, the Very Large Telescope array (VLT) is the flagship facility of European ground-based astronomy. Each of the Unit Telescopes can see objects that are four billion times fainter than those visible to the naked eye. The Unit Telescopes and the Auxiliary Telescopes can also work together to form the giant VLT Interferometer (VLTI) that allows astronomers to see details up to 25 times finer than with the individual telescopes. The VLT has achieved many firsts, including the first image of a planet around another star. The VLT is the most productive ground-based astronomy facility in the world and its instrumentation programme is the most ambitious ever conceived.



ALMA

In Search of our Cosmic Origins

High on the Chajnantor Plateau, at 5000 metres above sea level in the Chilean Andes, ESO and its international partners are operating the Atacama Large Millimetre/submillimetre Array (ALMA). ALMA is composed of 66 high-precision 12- and 7-metre antennas. It is the largest radio telescope in the world and studies the millimetre and submillimetre light from the most distant objects in the Universe. ALMA is a partnership of ESO, NAOJ and NRAO.



The ELT

The World's Biggest Eye on the Sky

ESO, in conjunction with its community and industry, is constructing the Extremely Large Telescope, the ELT. With a 39-metre main mirror, the ELT will be able to gather about 15 times more light than the largest optical telescopes operating today and it will be the largest optical telescope in the world. The ELT will tackle the biggest scientific challenges of our time, and may, eventually, revolutionise our perception of the Universe as much as Galileo's telescope did 400 years ago. First Light for the ELT is expected in 2024.



Chilean Andes, some 50 kilometres east of San Pedro de Atacama, the millimeter/submillimeter Array, ALMA — the largest astronomical project in the world — consists of 66 antennas acting together as a single telescope — an interferometer. It studies millimetre and submillimetre radiation emitted by some of the coldest and most distant objects in the Universe. ALMA is built by Europe, North America and East Asia in cooperation with the Republic of Chile.



Y. Beletsky/ESO

La Silla

ESO's First Observatory

Located 600 kilometres north of Santiago de Chile, at the edge of the Atacama Desert and at 2400 metres above sea level, La Silla has been an ESO stronghold since the 1960s. Here, ESO operates two of the most productive 4-metre-class telescopes in the world. The ESO 3.6-metre telescope is home to the world's foremost exoplanet hunter, HARPS (High Accuracy Radial velocity Planet Searcher). The 3.58-metre New Technology Telescope (NTT) broke new ground for telescope engineering and design and was the first in the world to have a computer-controlled main mirror (active optics).



R. Wesson/ESO

APEX

New Heights in Submillimetre Astronomy

The Atacama Pathfinder Experiment, APEX, is a 12-metre-diameter radio telescope, operated by ESO at a site 5100 metres above sea level on the Chajnantor Plateau in Chile. APEX, which was a pathfinder for ALMA, is a collaboration between the Max Planck Institute for Radio Astronomy, the Onsala Space Observatory and ESO.



C. Duran/ESO

The Survey Telescopes

Mapping the Sky in the Finest Detail

The Visible and Infrared Survey Telescope for Astronomy (VISTA) and the VLT Survey Telescope (VST) are among the most powerful imaging survey telescopes in the world. They produce far more data every night than all the instruments on the VLT put together and hugely increase the scientific discovery potential of the Paranal Observatory. VISTA is the largest survey telescope in the world. It observes at near-infrared wavelengths and has a main mirror 4.1 metres across. The VST is a state-of-the-art 2.6-metre telescope that surveys the sky in visible light.



ESO/B. Tafreshi (twanight.org)



Visit us at ESO's Headquarters, La Silla and Paranal.
Read more on: www.eso.org



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