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The World's Biggest Eye on the Sky

Friday 6 June 2014 10:00 (30 minutes)

The European Southern Observatory (ESO) is now entering the construction phase of what will be the world's largest optical/near-IR telescope, the European Extremely Large Telescope (E-ELT). With a 39-m primary aperture, the E-ELT is the most ambitious ground-based optical/near-IR facility currently forseen, and will provide astronomers with unprecedented sensitivity and spatial resolution. The foremost scientific objectives of the E-ELT are the detection and study of the very first structures in the early Universe (reaching back as far as 10-13 billion years ago), the detailed analysis of stellar populations in a representative sample of galaxies, and systematic characterization of the properties and formation processes of extrasolar planets.

The E-ELT is particularly innovative as it integrates the technique of adaptive optics directly into such a large telescope. So-called Ground-Layer Adaptive Optics (GLAO) will provide correct for atmospheric turbulence using a large deformable mirror in the telescope, enhancing the image quality across the full field-of-view, and mitigating the impact of atmospheric conditions on observations. When combined with the vast collecting power of the E-ELT mirrors, the telescope will provide European astronomers with a truly world-leading facility.

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