

ESO's Very Large Telescope (VLT) is a flagship facility for European ground-based astronomy. It is one of the world's most advanced optical telescopes, consisting of four Unit Telescopes with main mirrors of 8.2m diameter and four movable 1.8m diameter Auxiliary Telescopes. The telescopes can work together, to form a giant "interferometer", the ESO Very Large Telescope Interferometer, allowing astronomers to pick up much finer details of the cosmos than would be possible with the ATs or the UTs alone.

The 8.2m diameter Unit Telescopes can also be used individually. With one such telescope, images of celestial objects as faint as magnitude 30 can be obtained in a one-hour exposure. This corresponds to seeing objects that are four billion (four thousand million) times fainter than what can be seen with the unaided eye.

The VLT instrumentation programme is the most ambitious programme ever conceived for a single observatory. It includes large-field imagers, adaptive optics corrected cameras and spectrographs, as well as high-resolution and multi-object spectrographs and covers a broad spectral region, from deep ultraviolet (300 nm) to mid-infrared (24 um) wavelengths.

The 8.2m diameter telescopes are housed in compact, thermally controlled buildings, which rotate synchronously with the telescopes. This design minimises any adverse effects on the observing conditions, for instance from air turbulence in the telescope tube, which might otherwise occur due to variations in the temperature and wind flow. The first of the Unit Telescopes, "Antu", went into routine scientific operations on 1 April 1999. Today, all four Unit Telescopes and all four Auxiliary Telescopes are operational.

Although the four 8.2-metre Unit Telescopes can be combined in the VLTI, they are mostly used for individual observations and are only available for interferometric observations for a limited number of nights every year. But four smaller, dedicated 1.8-metre Auxiliary Telescopes (ATs) are available to allow the VLTI to operate every night.



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