

Twinkle twinkle little star

A glowing laser shines forth from the European Southern Observatory's Very Large Telescope. Piercing the dark Chilean skies, its mission is to help astronomers explore the far reaches of the cosmos. ESO Photo Ambassador(/public/outreach/partnerships/photo-ambassadors/) Gerhard Hüdepohl was on hand to capture the moment in a stunning portrait of modern science in action.

We have all gazed up at the night sky and seen the stars gently twinkle as the Earth's turbulent atmosphere causes their light to shimmer. This is undoubtedly a beautiful sight, but it causes problems for astronomers, who want the crispest possible views. To help them achieve this, professional stargazers use something that sounds as though it has come from science fiction: a laser guide star that creates an artificial star 90 km above the surface of the Earth.

The method by which it achieves this is nothing short of remarkable. The laser energises sodium atoms high in the Earth's mesosphere, causing them to glow and creating a bright dot that to observers on the ground appears to be a man-made star.

Observations of how this "star" twinkles are fed into the Very Large Telescope's adaptive optics system, controlling a deformable mirror in the telescope to restore the image of the star to a sharp point. By doing this, the system also compensates for the distorting effect of the atmosphere in the region around the artificial star. The end result is an exceptionally crisp view of the sky, allowing ESO astronomers to make stunning observations of the Universe, almost as though the VLT were above the atmosphere in space.

Links

- Adaptive Optics and the Laser Guide Star: http://www.eso.org/public/teles-instr/technology/adaptive_optics.html(http://www.eso.org/public/teles-instr/technology/adaptive_optics.html)
- ESO Photo Ambassadors(/public/outreach/partnerships/photo-ambassadors/)

Credit: ESO/G. Hüdepohl (www.atacamaphoto.com(<http://www.atacamaphoto.com/>))

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About the Image

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About the Object

Name:	Laser Guide Star(http://en.wikipedia.org/wiki/Laser_guide_star), Very Large Telescope(https://en.wikipedia.org/wiki/Very_Large_Telescope)
Type:	Unspecified : Technology : Observatory : Telescope
Category:	Paranal(/public/images/archive/category/paranal/)

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