What is an ELT optical module

Summary of Content

The ELT optical module, MORFEO, is a multi-conjugate adaptive optics system that corrects atmospheric distortions to enable sharp, high-resolution imaging for instruments like MICADO.

Overview of ELT Optics

The Extremely Large Telescope (ELT) features a 39-meter segmented primary mirror (M1), a convex secondary mirror (M2), a concave tertiary mirror (M3), and a quaternary adaptive mirror (M4) with up to 8,000 actuators, followed by a fifth mirror (M5) that steers the beam to the Nasmyth focus. This folded three-mirror anastigmat design delivers a nearly diffraction-limited output beam at f/17.48 over a 10-arcminute field of view, providing extremely sharp images across optical and near-infrared wavelengths .

MORFEO Adaptive Optics Module

MORFEO is a post-focal, multi-conjugate adaptive optics (MCAO) module designed to compensate for atmospheric turbulence, which blurs astronomical images. It does not perform observations itself but enables other instruments, such as the near-infrared camera MICADO, to achieve exceptional image quality .

Key Features

• Wavefront Sensing: MORFEO uses nine guide stars (three natural and six artificial laser stars) to measure atmospheric distortions at multiple altitudes. Wavefront sensors capture images hundreds of times per second with low noise .

• Deformable Mirrors: Up to three deformable mirrors correct turbulence at different atmospheric layers, ensuring uniform image quality across the field of view.

Article Content

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As an important part of fiber-optic communication, an optical module is a photoelectric converter which converts

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An optical module, also called fiber optic transceiver or optical transceiver, is a typically hot-pluggable device used in

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An optical module is a device for converting electrical signals to optical signals and vice versa, widely used in telecommunications

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Optical module

Optical modules typically have an electrical interface on the side that connects to the inside of the system and an optical interface on

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Everything You Need to Know About Optical Modules

Optical modules are electronic devices that transmit data over long distances using light waves. They are used in

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