

The logo for ALPAO, featuring the word "ALPAO" in a bold, white, sans-serif font. The text is centered within a white, stylized oval shape that is open at the top and bottom, resembling a lens or a celestial ring. The background of the entire image is a night sky filled with stars and the Milky Way galaxy, which is visible as a bright, hazy band of light stretching diagonally across the frame. In the lower right, there is a large, modern, multi-story building with a curved facade, illuminated from within, and two bright orange laser beams emanating from its upper levels, pointing towards the upper left. To the left of the main building, there is a smaller structure with a staircase and a flagpole.

# ALPAO

*Leading the light*

# **ASTRONOMY**



# Diffraction is the limit

Astronomy and Adaptive Optics are a match made in the stars. Combining both state-of-the-art technology with the oldest science, one can no longer be imagined without the other.

Adaptive Optics enables users to take pristine images from ground-based telescopes by removing the optical aberrations introduced by the atmosphere. It allows astronomers to observe the plethora of celestial bodies existing in the Universe like no other.

## SCAO

Single Conjugate  
Adaptive Optics

Single guide star

Single deformable mirror

Narrow field of view

Bright and compact targets

## XAO

Extreme  
Adaptive Optics

Single guide star

Single high order deformable mirror

Narrow field of view

High contrast and exoplanet imaging

## LTAO

Laser Tomography  
Adaptive Optics

Multiple guide stars

Single deformable mirror

Narrow field of view

Faint object imaging

## MCAO

Multi-Conjugate  
Adaptive Optics

Multiple guide stars

Multiple deformable mirrors

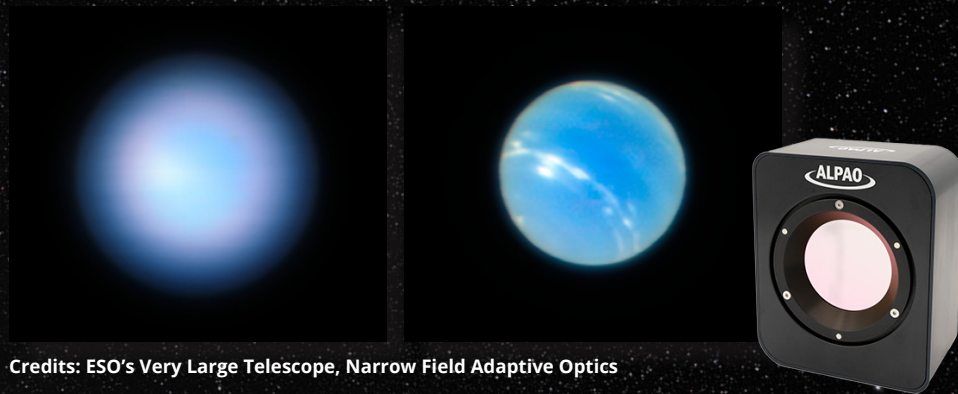
Wide field of view

Faint object imaging



**“By using Adaptive Optics, the sharpness of the images obtained when observing objects through the atmosphere can be greatly improved. Associated to the new generation of extremely large telescopes, Adaptive Optics paves the way to imaging and spectral characterization of exo-planets or to the observation of objects as old as our known Universe.”**

**Stefan Stroebele and Pierre-Yves Madec, Senior Adaptive Optics Scientists at ESO**

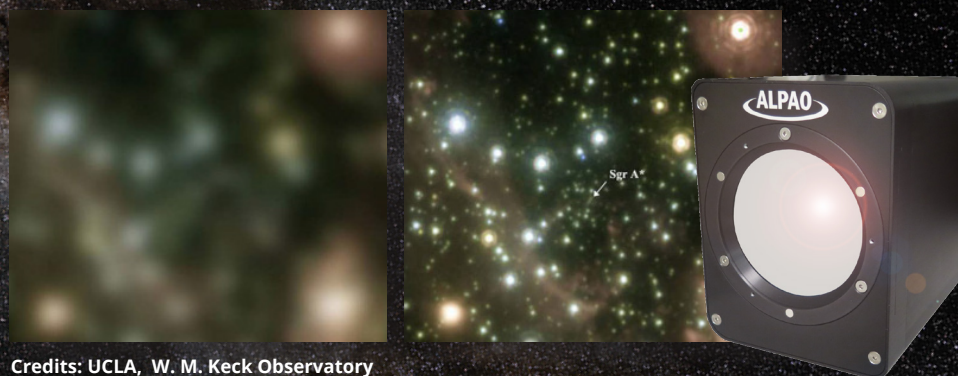


Credits: ESO's Very Large Telescope, Narrow Field Adaptive Optics

**DM 277**

**“We use Adaptive Optics to make very fine corrections. This is called Extreme Adaptive Optics (XAO). Most of the science cases you cannot even imagine without it. We are currently working with ALPAO to bring our current systems to the next level. ”**

**Sam Ragland, Senior Scientist at W. M. Keck Observatory**



Credits: UCLA, W. M. Keck Observatory

**DM 3228**

### ALPAO Astronomy related products

#### Deformable Mirrors

DM 192    DM 820  
DM 277    DM 1353  
DM 308    DM 3228  
DM 468

#### Shack-Hartmann Wavefront Sensors

SH-EMCCD    SH-EMCCD fast  
SH InGaAs    SH-InGaAs fast  
SH-sCMOS    SH-sCMOS UV ext.

#### Software Control

ALPAO Core Engine  
ALPAO RTC





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Find us also on



Credits: ESO / José Francisco