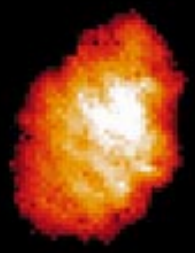
ALFA: Comparison with HST

Astronomers observed the double star BD+31°643 in December, 1997, using both the Hubble Space Telescope and the German 3.5m-telescope on Calar Alto, Spain.

At Calar Alto, a new adaptive-optics instrument called ALFA was used to remove the atmospheric distortions responsible for blurring ground-based images.

More significantly, ALFA operated for the first time by utilizing a laser that produces an artificial bright star anywhere in the night sky. After correcting for atmospheric distortions, the double star is resolved into two separate components and the image sharpness is comparable to that of the Hubble Space Telescope.

1



Calar Alto 3.5m-Telescope: No correction for atmospheric distortions

2

Calar Alto 3.5m-Telescope: Atmospheric distortions corrected using adaptive optics and an artificial, laser-produced star

3

Hubble Space Telescope