A FIRST FOR THE VLT

OBSERVATIONS OF THE GAMMA RAY BURST GRB990510, AND DISCOVERY OF LINEAR POLARISATION

International teams of astronomers are now busy working on new and exciting data obtained in May with telescopes at the European Southern Observatory (ESO).

Their object of study is the remnant of a mysterious cosmic explosion far out in space, first detected as a gigantic outburst of gamma rays on May 10, GRB990510.

Gamma-Ray Bursters (GRBs) are brief flashes of very energetic radiation – they represent by far the most powerful type of explosion known in the Universe and their afterglow in optical light can be 10 million times brighter than the brightest supernovae. The May 10 event ranks among the brightest one hundred of the over 2500 GRBs detected in the last decade.

The new observations include detailed images and spectra from the VLT 8.2-m ANU (UT1) telescope at Paranal, obtained at short notice during a special Target of Opportunity programme. This happened just over one month after that telescope entered into regular service and demonstrates its great potential for exciting science.

In particular, in an observational first, the VLT measured linear polarisation of the light from the optical counterpart, confirming that synchrotron radiation is involved. It also determined the redshift of the host galaxy of GRB990510, z = 1.619, corresponding to a distance of more than 7,000 million light-years to this GRB (assuming a Hubble Constant H₀ = 70 km/s Mpc⁻¹, a mean density Ω₀ = 0.3 and a Cosmological Constant Lambda = 0).

This is an excerpt of the ESO press release of 18 May 1999 where more information on the science and organisation of this collaboration can be found including the name of the astronomers who participated in this investigation and the web site address of their institutes.

The full text and 7 pictures are at: www.eso.org/outreach/press-rel/pr-1999/pr-1999/pr-08-99.html