



UNIT 3:

DISTANCES (2nd part). QUASARS

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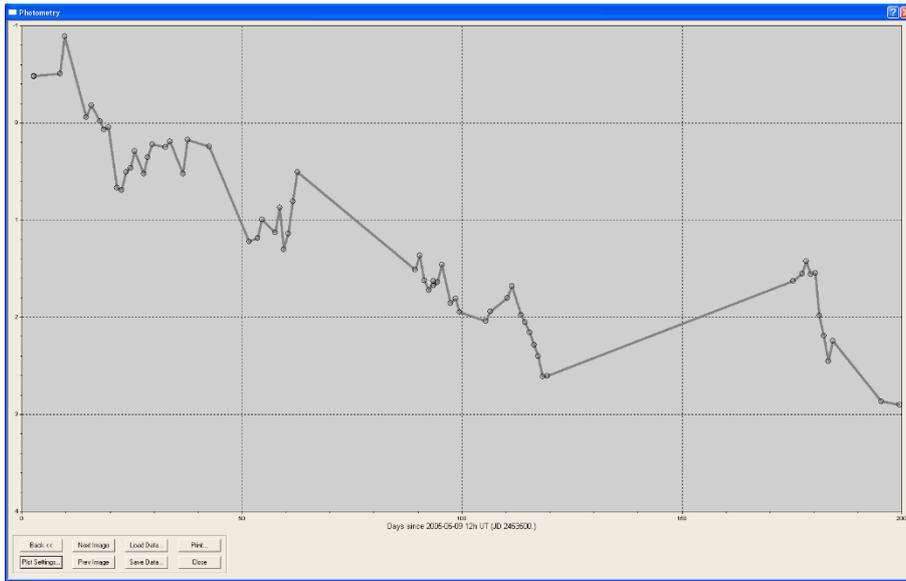
Illustrations: Inés Bonet

TEACHER'S GUIDE

This unit has been designed to give the student a first contact with Peter_soft tools related to photometry, one of the main techniques used in Astrophysics for the study of the physical properties of celestial objects.

The students have to measure the brightness variation of the quasar 3C454 over a period of several months. For this purpose, they are provided with 63 images obtained by the Liverpool Telescope located at the Roque de los Muchachos Observatory, on the island of La Palma. This sequence of images was obtained during a decrease in the brightness of the object, which was observed after an explosion of brightness, possibly due to the destruction of a high-mass body in the black hole inside the quasar. As its luminosity decreases, repetitive brightness increases are observed, possibly due to material penetrating the accretion disk surrounding the black hole, becoming extremely hot and emitting light.

The period studied was about 200 days, from May 12 to November 24, 2005. The following graph shows the variation in brightness of the quasar during those 200 days. We can see that, as the brightness decreased, there were small, short-lived rises. In the second half of the period there is an absence of data for almost 2 months, when the quasar was not tracked with the Liverpool Telescope.



For further information, visit our website: www.iac.es/peter

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