

## Stellar occultations by transneptunian objects and Centaurs and the role of small observatories

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The Pontificia Universidad Católica de Chile (UC) Observatory is located about 25 km north of the Santiago de Chile downtown. With 3 telescopes between 40 and 50 cm in aperture, several cameras in the visible, and three spectrographs, it develops scientific, teaching and outreach activities.

Since 2011, we are taking part in coordinated observation campaigns of stellar occultations by TNOs (including Pluto) and Centaurs. This is part of an international collaboration that includes participants in Paris, Granada, and Rio de Janeiro.

Stellar occultations allow to determine the object size and shape with kilometer accuracy, to detect the presence of an atmosphere with pressures down to nanobars, and detect satellites or debris around the main object. It is almost the only way to detect rings around small bodies.

Including small observatories and portable telescopes in the campaigns is a good way to improve the geographic coverage for an event. At about 400 km south of Cerro Tololo, Cerro Pachon, and La Silla, the UC Observatory is an important complementary observing site. It plays a key role in constraining the shapes of the observed bodies and increases the chances of detection, as uncertainties on the shadow paths are typically 500–1000 km.

The equipment used at the UC Observatory includes a 40-cm aperture refractor telescope and an EMCCD detector for fast photometry. This allows to observe occultations of stars down to visual magnitudes of  $\sim 16$  mag with a typical time resolution of 1 second.

We will present some of the results, obtained by the group so far, that include observations from the UC Observatory.