

**CONTROL ID:** 3049403

**TITLE:** Star occultations by asteroids

**ABSTRACT BODY:**

**Abstract (2,250 Maximum Characters):** An occultation occurs when an asteroid passes in front of a more

distant object - a star - and covers the light that comes from it. By observing occultations of stars by asteroids we can directly determine the sizes of asteroids. Current methods take only the uncertainty of observation timings into account, whereas the new method aims to take into account model's uncertainties as well. To obtain an asteroid model with uncertainties clones of the nominal solution are created. Those clones are created by making small changes in model's parameters and are accepted or rejected based on the fit to the observations within a confidence level. The main goal of new method is to specify asteroid diameters with uncertainty, which takes into account the uncertainties from: observing time, rotational period, spin position and shape.

**Category:** Asteroid Physical Characteristics:

**Sub-Category:** None

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**Student Status (RC):** New PhD

**Plain-Language Abstract Synopsis:** An occultation occurs when an asteroid passes in front of a more

distant object - a star - and covers the light that comes from it. By observing occultations of stars by asteroids we can directly determine the sizes of asteroids. Current methods take only the uncertainty of observation timings into account, whereas the new method aims to take into account model's uncertainties as well. To obtain an asteroid model with uncertainties clones of the nominal solution are created. Those clones are created by making small changes in model's parameters and are accepted or rejected based on the fit to the observations within a confidence level. The main goal of new method is to specify asteroid diameters with uncertainty, which takes into account the uncertainties from: observing time, rotational period, spin position and shape.

**Contributing Teams:** (none)