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Status of TAOS Project and a Simulator for TNO Occultation

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The majority of trans-Neptunian objects (TNOs) are probably small comets beyond the orbit of Neptune. Study of TNOs might be able to explain the origin of short-period comets and to help our understanding of the process of planet formation and the early history of the solar system. Occultation survey is currently the only way available to detect these objects down to the size of a few kilometers at such a distance. The general idea of applying a blind occultation survey at a time scale of a fraction of a second will be shown. In addition to a simple number count, the size distribution of TNOs and other information could be obtained. A novel method (software) applied to CCD readout, namely, zipper mode operation [1,2,3] is introduced. We'll introduce the status of TAOS (Taiwan-America Occultation Survey) project. Multiple telescopes monitor the same field in the sky simultaneously to reduce the false alarm rate and to make the final statistical result more reliable.[4]For the first time, the analysis of three telescope data will be presented. The development of a simulator based on physical diffraction and other astrophysical or systematic parameters such as the use of the spectrum from a real star will also be presented.

Keywords: TNO; KBO; EKBO; occultation; survey; TAOS; zipper; comet

References

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