## Kuiper Belt Object Occultation Survey : Nature of Occultations

Alcock, C., Dave, R., Giammarco, J., Lehner, M., Chen, W.-P., Lee, T., King, S.-K., Wang, A., Wang, S.-Y., Wen, C.-Y., Cook, K., Marshall, S., Porrata, R., Byun, Y. I., de Pater, I., Liang, C., Rice, J., Lissauer, J.

*University of Pennsylvania, USA*
*Lawrence Livermore National Laboratory, USA*
*Academia Sinica Institute of Astronomy & Astrophysics, Taiwan*
*National Central University, Taiwan*
*Yonsei University Observatory, Korea*

Objects smaller than about 10 km in diameter will be too faint to detect in reflected sunlight if they are located in the trans-Neptunian region or beyond. These objects can in principle be detected via their occultations of relatively bright stars, as proposed by Bailey (1976). This technique is difficult to implement because the anticipated occultation rate is extremely low, the occultation events are brief (<1 sec) in duration, and the strength of the events is reduced by diffraction of visible light around the objects. We have performed an extensive series of computations of occultation events, including the effects of size and shape of the occulting objects, finite angular size of the source stars, finite bandwidth and integration time. These allow us to estimate the signal to noise of plausible events by trans-Neptunian Objects. This project is supported by NASA (at UPenn), DOE (at LLNL), Academia Sinica (at ASIAA), NSC (at NCU), and KRF (at Yonsei).