

An Outer Solar System High Ecliptic Survey. E. Ansbro 1, S. F. Green 1, A. Christou 2, J. B. Murray 1, 1 PSSRI, The Robert Hooke Building, The Open University, Milton Keynes, MK7 6AA, UK, 2 Armagh Observatory, Armagh, N.Ireland

Introduction: Edgeworth Kuiper Belt Objects (EKBOs) orbit beyond Neptune and offer important clues about the formation of our solar system. Far from resembling an accretion disk leftover, the discovery of some EKBOs with inclinations as high as 40 degrees demonstrates that the full latitudinal extent of the EK belt must be large. Ascertaining the true extent of the transneptunian objects (TNO) inclination distribution is important for planning TNO surveys. It is important for determining the total number of TNOs and the past and present mass contained in the EKB. It will also provide data that may confirm or alter our understanding of solar system formation.

Past surveys of TNOs are probably a poor representation of the true distribution of EKBO inclinations because most were found in surveys centred on the ecliptic. Such surveys were biased towards finding low inclination objects which spend the majority of their orbit close to the ecliptic.

A 0.9 metre telescope at Kingsland Observatory, County Roscommon, Ireland has been carrying out a two year statistical survey by imaging a range of ecliptic latitudes that are equidistant from each other and measuring the density of EKBOs found at each latitude. Imaging sets of fields spaced uniformly North of the ecliptic will determine the resonance structure imposed on the belt by the gravitational effects of Neptune. At each longitude, fields at several ecliptic latitudes have mapped the inclination distribution of the belt, testing competing theories for the formation and orbital evolution of the giant planets.

The survey also includes a search for a hypothetical ninth planet beyond the EKB as a follow up survey of some 'suspected planets'. The follow up survey will attempt to detect whether or not this planet exists based on the targets located by prior research.