



# 复旦大学物理系物质科学报告

## Physics Department Colloquium

### **A Golden Age for Astrometry - Uncovering the Secrets of the Milky Way**

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**Abstract:** For millennia we have measured the positions of stars in the heavens, leading to profound advances in our understanding of the universe. We are on the cusp of another such era, as new surveys are performing astrometry to unprecedented precision. These surveys have proved to be a fabulously rich resource for learning about our own Galaxy. I will discuss some recent results from proper motion surveys, showing how the kinematics of stars around us can tell us much about both the disc and the halo of the Milky Way. Exploiting the Sloan Digital Sky Survey catalogue of Bramich et al. (2008) we have uncovered relics of accretion in halo, probed the shape of the dark matter distribution, and constrained the mass profile of the disc. Thanks to recent work by colleagues in Europe, the proper motions precision of this catalogue is now enabling studies that were previously not possible. One example is the search for stars that have been flung out from the innermost regions of our Galaxy, which are important probes of the mass distribution in the Milky Way. Such unprecedented precision means that, not only are we able to carry out cutting-edge science today, it is a crucial test-bed for future studies. Excitement in this field is now building due to the recent launch of the Gaia space astrometry satellite. This European-led mission will measure the positions and velocities of stars to previously unimaginable precision, revolutionising our knowledge of galaxies in the universe.

**Time: 2:00 pm, Tuesday, 2014.4.29**

**Location: Physics Building, Room 221B**

(Cookies and coffee are served from 1:30 pm)