

# Dust studies in the era of precision Galactic astronomy

Haibo Yuan<sup>1</sup>

*<sup>1</sup>Beijing Normal University, China*

With large scale surveys such as Gaia and LAMOST, we are entering an era of precision Galactic astronomy, whereas basic astrometric, photometric, and spectroscopic stellar parameters are measured to extreme high precision. Using the "star pair" technique, we have measured multi-band reddening values of about 5 million stars at a 1 per cent accuracy, providing a great opportunity to trace the distributions and properties of dust in the Galaxy. In this contribution, we will focus on three topics: 1) the 3D large scale distribution of dust in the Galaxy, i.e., the first discovery of (thin and thick) dust disks and dusty halo in the Galaxy and discussions of their properties and origins; 2) possible detection of dust reddening effects caused by zodiacal dust within the solar system; 3) the needs and challenges of high precision dereddening of Galactic and extra-galactic targets.