Zhigang Bao, Xiucai Ding and Ke Wang* (kewang@ust.hk), Department of Mathematics, HKUST, Clear Water Bay, Kowloon, 999077, Hong Kong. Limiting distribution of outlier singular vectors of low-rank matrices with additive random noise.

In this talk, we consider the matrix model \( Y = S + X \) where \( S \) is a low-rank deterministic matrix, representing the signal, and \( X \) is a random noise. It is a central task in high dimensional data analysis to understand how the spectral properties of \( S \) are altered with a small random perturbation. We give a precise description of the limiting distribution of the angles between the outlier singular vectors of \( Y \) with their counterparts, the leading singular vectors of \( S \). It turns out that the limiting distribution depends on the structure of \( S \) and the distribution of \( X \), and thus is non-universal. This talk is based on a joint work with Zhigang Bao and Xiucai Ding. (Received August 14, 2018)