

## **TESTING SIGNAL ALIGNMENT IN HIGH-DIMENSIONAL TENSOR DATA**

**Speaker: Zhenggang Wang**  
**Southeast University**

### **Time&Venue:**

**SCMS Room 102, October 15 (Thursday), 14:00-15:00**

### **Abstract:**

High-dimensional tensor data often contain low-rank signals whose directions are difficult to estimate accurately. This talk considers how to test whether such signals align with given directions and whether two noisy tensors have aligned latent signals. Our approach uses tensor contraction to construct a matrix whose spectral properties reflect signal alignment. We develop testing procedures and establish a general central limit theorem for linear spectral statistics, accounting for the dependence introduced by contraction. I will also discuss numerical results. The talk is based primarily on joint work with Ruihan Liu and Jianfeng Yao.

### **Biography:**

Dr. Zhenggang Wang is an Assistant Professor at Southeast University. He received his B.Sc. in 2016 from the School of Mathematical Sciences, Peking University, and his Ph.D. in 2021 from the Department of Statistics and Actuarial Science, the University of Hong Kong. He subsequently carried out post-doctoral research at The University of Hong Kong (2021 – 2022), the University of California, Davis (2022 – 2024) and City University of Hong Kong (2024). His primary research interests include random matrices, complex networks, random tensors, and high-dimensional statistics.