

1116-15-1745 **Ke Ye*** (kennyyeke@gmail.com), University of Chicago, Chicago, IL 60637. *Structural tensors of bilinear maps*. Preliminary report.

Bilinear maps are very important in both Multilinear Algebra and Complexity Theory. For example, matrix multiplication is a bilinear map and its computational complexity is still a mystery. In most situations, computational complexity of a bilinear map is characterized by the rank of its structural tensor. In this talk, we will discuss the study of structural tensors of bilinear maps. We will present a framework to calculate an upper bound for the rank of the structural tensor of a bilinear map. Using this framework, we are able to write down a tensor decomposition of the structural tensor and hence an algorithm to compute the bilinear map. This is joint work with Lek-Heng Lim. (Received September 22, 2015)