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**Lek-Heng Lim** (lekheng@galton.uchicago.edu), 5747 South Ellis Avenue, Jones 122B, IL 60637, and **Yang Qi\*** (yangqi@galton.uchicago.edu), 5747 South Ellis Avenue, Jones 114, Chicago, IL 60637. *On the rank preserving property of special linear sections and its applications in tensors.*

In this talk, we study the rank preserving property of linear sections of projective varieties, which is motivated by important problems arising from signal processing and computer science. We give sufficient conditions under which a linear section of a projective variety has the general rank preserving property. As corollaries, we show Comon's conjecture is true for a general symmetric rank- $r$  tensor, i.e., a general symmetric rank- $r$  tensor has rank  $r$ , and Strassen's direct sum conjecture is true for general tensors  $T$  and  $T'$ , i.e., the rank of  $T \oplus T'$  is the sum of the rank of  $T$  and the rank of  $T'$  for general tensors  $T$  and  $T'$ . We also present some progress on the border rank version of Comon's conjecture. This is joint work with Lek-Heng Lim. (Received February 08, 2018)