1142-65-231 **Tianran Chen***, P.O. Box 244023, Montgomery, AL 36124. *Direct acyclic decomposition for Kuramoto networks.*

Synchronization in networks of interconnected oscillators is a fascinating phenomenon that appears naturally in many independent fields of science and engineering. The Kuramoto model, being extremely simple yet surprisingly powerful, is one of most widely used model for studying such behavior. A substantial amount of work has been devoted to understanding all possible frequency synchronization configurations on a given network modeled the Kuramoto model. These configurations are defined by a system of rational equations that has rich structures. Taking an approach from toric geometry and numerical algebraic geometry, in this talk, we propose a decomposition scheme that can reduce a complex network into smaller direct acyclic networks while preserving frequency synchronization configurations. (Received September 04, 2018)