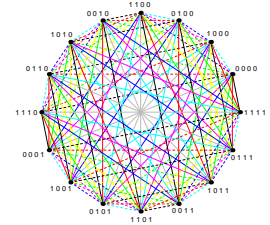


**Jointly Organized by  
School of Computer Science and  
Department of Mathematics and Statistics**



April 29 (Monday), 16:30 – 17:30, Burnside Hall 1205

**Complete Combinatorial Generation of Small Point Configurations and Hyperplane  
Arrangements**

by

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The complete generation of the combinatorial types of geometric configurations such as point configurations or hyperplane arrangements has been an outstanding problem for a long time. These generation problems do not seem to have direct solutions. However, the combinatorial types of the geometric objects can be expressed in terms of so-called oriented matroids. A recent progress on the complete enumeration of oriented matroids enables us to generate all combinatorial types of small point configurations and hyperplane arrangements in general dimension, including degenerate ones. This extends a number of former works which concentrated on the non-degenerate case and are usually limited to dimension 2 or 3. Our initial study on the complete list for small cases has shown its potential in resolving geometric conjectures.