TEXAS STATE UNIVERSITY

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Discrete Mathematics Seminar

Time: Friday, February 12, 2020, 2:15 - 3:15 PM (Central Time)
Title: Oriented Matroids from Triangulations of Products of Simplices
Speaker: Dr. Chi Ho Yuen, Brown University
Zoom Link: Meeting ID: 999 2462 8868, Password: 753321

Abstract:

We introduce a construction of oriented matroids from a triangulation of a product of two simplices. For this, we use the structure of such a triangulation in terms of polyhedral matching fields. The oriented matroid is composed of compatible chirotopes on the cells in a matroid subdivision of the hypersimplex, which might be of independent interest. We also derive a topological representation of the oriented matroid using a variant of Viros patchworking. If time permits, we will mention the extension to matroids over hyperfields and potential applications in complexity theory. This is joint work with Marcel Celaya and Georg Loho.