

Michigan Math Club

Thursday at 4pm in the Commons

Free Pizza and Pop

Regular Polytopes

Igor Kriz

Abstract for 4 December

We all know regular polygons, and the five Platonic solids in dimension 3. Are there similar regular solids (polytopes) in higher-dimensional spaces? The answer is somewhat surprising: while the tetrahedron, cube and octahedron have analogues in every dimension, the only other dimension (besides 2 and 3) in which other regular polytopes exist is 4. These exceptional polytopes are called the 24-cell, the 120-cell and the 600-cell. I will exhibit a very comprehensible method for visualizing 4-dimensional polytopes as movies of their cross-sections. We will watch movies of 4-dimensional polytopes up to the 120-cell from different vantage points, and then explain how to make a "mental movie" of the 600-cell.

