

Spring  
2014

# *MATHEMATICAL SCIENCES COLLOQUIUM*

“An Approach to the Dodecahedral  
Conjecture Based on Bounds for Spherical  
Codes.”

Abstract: The dodecahedral conjecture states that in a packing of unit spheres in  $\mathbb{R}^3$ , the Voronoi cell of minimum possible volume is a regular dodecahedron with inradius one. The conjecture was first stated by L. Fejes Toth in 1943 and was finally proved by Hales and McLaughlin over 50 years later using techniques developed by Hales for his proof of the Kepler conjecture. In 1964, Fejes Toth described an approach that would lead to a complete proof of the dodecahedral conjecture if a key inequality were established. We describe a connection between the key inequality required to complete Fejes Toth's proof and bounds for spherical codes and show how recently developed strengthened bounds for spherical codes may make it possible to complete Fejes Toth's proof.

**Speaker: Kurt Anstreicher**

**(University of Iowa)**

**Monday, April 28, 2014**

**Time: 4:00 – 5:00 PM**

**Location: Sage 5101**

**Refreshments: 3:30 – 4:00 PM, AE 4<sup>th</sup> Floor Lounge**



