# Pure Mathematics Seminar

## The isoperimetric problem for polyhedra

**Dr. Oleg Musin**
SMSS, UTRGV

The isoperimetric problem for polyhedra first considered by Lhuilier (1782) and Steiner (1842). Steiner conjectured that each of the five Platonic solids is the best i.e. with the highest IQ (Isoperimetric Quotient) among all isomorphic polyhedra. This problem is still open for the icosahedron.

This problem with given number of faces $f$ currently solved only for $f < 8$ and $f = 12$. However, the first theorem on the problem was discovered in XIX century. Namely, Lindelöf (1869) and Minkowski (1897)] proved that "Of all convex polyhedra with the same number of faces, a polyhedron with the highest IQ is circumscribed about a sphere with touches each face in its centroid."

In this survey talk we consider several theorems and conjectures related to the isoperimetric problem for polyhedra. In particular, we will discuss a proof of the Goldberg - Fejes Toth inequality (1934, 1948) that perhaps can be extended for all dimensions.

The talk does not require preliminary knowledge.

Date: **Friday, April 29, 2016**
Time: **3:00 pm**
Place: **Edinburg:** MAGC 1.302, **Brownsville:** UBLB 2.206

**The talk will delivered live at the *Brownsville* campus and will be streamed to the Edinburg campus**

**Coffee and cookies will be served.**

For further information or for special accommodations, please contact Dr. Sergey Grigorian via email at [sergey.grigorian@utrgv.edu], or Dr. Alexey Garber at [alexey.garber@utrgv.edu], or visit the webpage http://www.utrgv.edu/math/news-events/seminars/puremath/index.htm