TEMPLE UNIVERSITY MATHEMATICS COLLOQUIUM

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will speak on

On Mahler conjecture for convex bodies

ABSTRACT: Let K be convex, symmetric, with respect to the origin, body in $\mathbb{R}^n$. One of the major open problems in convex geometry is to understand the connection between the volumes of K and K^*. Where, K^* is the polar body of K:

$$K^* := \left\{ \vec{x} \in \mathbb{R}^n \ : \ \vec{x} \cdot \vec{y} \leq 1 \ \ \forall \, \vec{y} \in K \right\}.$$

The Mahler conjecture is related to this problem and it asks for the minimum of the volume product

$$\mathcal{P}(K) = \mathrm{vol}_n(K)\mathrm{vol}_n(K^*).$$

In 1939, Santalo proved that the maximum of $\mathcal{P}(K)$ is attained on the Euclidean ball. About the same time Mahler conjectured that the minimum should be attained on the unit cube or its dual - cross-polytope. Mahler himself proved the conjectured inequality in $\mathbb{R}^2$. But the question is still open even in the three-dimensional case! In this talk we will discuss some recent progress and ideas concerning this conjecture.

MONDAY, SEPTEMBER 14, 2015
LECTURE AT 4:00 PM
COFFEE, TEA, AND REFRESHMENTS FROM 3:40 PM
ROOM 617, WACHMAN HALL
DEPARTMENT OF MATHEMATICS