COLLOQUIUM SPEAKER SERIES
Mathematics and Computer Sciences

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12:00-12:50, room D634

Dr. Saieed Akbari

Professor at Sharif University of Technology, Teheran, Iran.

Since 2006: Senior Associate Researcher, School of Mathematics, Institute for Research in Fundamental Sciences (IPM).

1995: Ph.D. Sharif University of Technology.

On Zero-Sum Flows in Graphs and Designs

Abstract

For an undirected graph G, a *zero-sum flow* is an assignment of non-zero real numbers to the edges, such that the sum of the values of all edges incident with each vertex is zero. It has been conjectured that if a graph G has a zero-sum flow, then it has a zero-sum 6-flow. Among other results it is shown that if G is an r-regular graph ($r \geq 3$), then G has a zero-sum 7-flow. Furthermore, if r is divisible by 3, then G has a zero-sum 5-flow. We generalize the concept of zero-sum flows for 2-designs. More precisely, by a *zero-sum flow* for a 2-design, we mean a nowhere-zero vector in the null space of its incidence matrix. We show that every Steiner triple system admits a zero-sum flow.

Everyone is welcome !