TEXAS STATE UNIVERSITY

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Discrete Mathematics Seminar

Time: Friday, October 28, 2016, 2:15-3:15 PM
Room: 237 Derrick Hall
Title: On the Connected Forcing Number of a Graph
Speaker: Mr. Boris Brimkov, Department of Computational and Applied Mathematics, Rice University

Abstract:

Zero forcing is a dynamic graph coloring process whereby a colored vertex with a single uncolored neighbor forces that neighbor to be colored. Zero forcing has applications in coding theory, power network monitoring, modeling propagation in social networks, and in approximating certain linear algebraic parameters. This talk introduces a variant of zero forcing in which the initially colored set of vertices induces a connected subgraph. A related parameter of interest is the connected forcing number - the cardinality of the smallest initially colored connected vertex set which forces the entire graph to be colored. We discuss the complexity of computing this parameter, derive closed formulas for it in specific families of graphs, present structural results about minimum connected forcing sets, and characterize graphs with extremal connected forcing numbers.