

# COLLOQUIUM

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## On a Combinatorial Propagation Game with an Application to the Inertia of Graphs



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Room: RI 208

**Abstract:** Zero forcing is a combinatorial game on a graph  $G$  with the goal of changing (or forcing) an unfilled vertex to filled by following certain rules while minimizing the overall cost. The resulting graph parameter, known as the zero forcing number, yields an upper bound for the maximum nullity over all symmetric matrices associated with  $G$ .

Recently, a variant of this game, involving an auxiliary parameter  $q$ , has been devised as a 2-player game whose associated zero forcing number provides an upper bound on the maximum nullity over all symmetric matrices associated to  $G$  and having  $q$  negative eigenvalues. In this talk, I will present a survey of results on some properties of this  $q$ -analogue of zero forcing along with connections to a certain inverse eigenvalue problem for graphs.