Department of Mathematics and Statistics

Colloquium Series

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Spread of Infection in a Network

Abstract: The spread of an infection across a network depends on the degree of interconnectedness of the network and on the level of contagiousness of the infection. We explore what happens as networks grow or shrink in size, along with how the infection rate p affects the spread. We first consider a complete graph as a model of a "bubble" of people who interact freely. Then we explore a variant of star graphs, which could model a teacher interacting with several disjoint classes of students. Using graph theory and combinatorial reasoning, we show that limiting the size of gatherings and reducing the value of p can dramatically slow the spread of a highly contagious disease like COVID-19.

Keywords: Graph Theory and Combinatorics, Spread of infections, COVID-19.

Wednesday, April 10, 1:05 – 1:50 pm in 4-2-314