INSTITUTE OF MATHEMATICAL SCIENCES
UNIVERSITI MALAYA

SIRI SEMINAR KUMPULAN PENYELIDIKAN

Title : Contagion in Networks

Speaker : Kwa Kiam Heong

Date : 15 July 2022

Time : 3:00pm-4.00pm

Venue : Google Meet
Video call link: https://meet.google.com/gjz-kqwo-urx
Or dial: (US) +1 573-887-5214 PIN: 213 684 247#

ABSTRACT

Consider a narrative initiated by a group of players S belonging to a network. We assume that all the remaining players in the network have a constant adoption threshold q such that each of them will only accept the narrative if at least a fraction q of his own neighbors have accepted the narrative. Consequently, there is a maximum threshold q below which full contagion (i.e. acceptance of the narrative by all players in the network) can occur from S, called the contagion threshold of S. We study how the contagion threshold is influenced by the neighborhood of a player or by the global topology of the network. Firstly, we illustrate how contagion may or may not occur and how it depends on the position of the initiator. Secondly, we indicate an algorithm to compute the contagion threshold that admits a natural interpretation. Thirdly, we show when neighborhood-inclusion pre-order is preserved by the contagion threshold and how it may fail. Next, we show that the contagion threshold of a connected group in a tree is completely determined by the degrees of other players. Finally, we state a characterization for groups of players with high contagion thresholds.

All are Welcome