Combinatorics Seminar

Wednesday, October 25th, 2023

4:00-5:00 pm in Hume 321

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Saturation Numbers of Double Stars

Abstract

A graph G is H-saturated if G contains no copy of the graph H, but for any missing edge e of G, there exists a copy of H in $G + e$. The saturation number of the graph H, denoted by $sat(n, H)$, is the minimal number of edges among all H-saturated graphs with n vertices. A star on $a + 1$ vertices and a edges is a graph by joining one vertex (called center) to all other a vertices. In this talk, we focus on the saturation number $sat(n, S_{t+1,t+1})$, where $S_{t+1,t+1}$ is called a balanced double star obtained by adding an edge between the centers of two stars S_{t+1}. We firstly prove the new upper bound $sat(n, S_{t+1,t+1}) \leq \frac{tn}{2} + \frac{t+1}{2}$ and establish the graph achieving this upper bound. Specifically, we will determine the saturation number for $S_{t,t}$ for sufficiently large n and small t. Finally, we will also provide the upper bounds for unbalanced double stars $S_{a+1,b+1}$ where $a < b$. This is joint work with Dr. Bing Wei.