

Discrete Mathematics Seminar

Illinois State University

2:00–2:50 pm, April 6

Speaker: Xiaonan Liu, Georgia Institute of Technology

Polynomial χ -binding functions for t -broom-free graphs

For any positive integer t , a t -broom is a graph obtained from $K_{1,t+1}$ by subdividing an edge once. In this paper, we show that, for graphs G without induced t -brooms, we have $\chi(G) = o(\omega(G)^{t+1})$, where $\chi(G)$ and $\omega(G)$ are the chromatic number and clique number of G , respectively. When $t = 2$, this answers a question of Schiermeyer and Randerath. Moreover, for $t = 2$, we strengthen the bound on $\chi(G)$ to $7\omega(G)^2$, confirming a conjecture of Sivaraman. For $t \geq 3$ and $\{t$ -broom, $K_{t,t}\}$ -free graphs, we improve the bound to $o(\omega^t)$. Joint work with Joshua Schroeder, Zhiyu Wang, and Xingxing Yu.

