Lethbridge Number Theory and Combinatorics Seminar

Monday — October 15, 2018
Room: C630
Time: 12:00 to 12:50 p.m.

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Fractional clique k-covers, vertex colorings and perfect graphs

The relationship between independence number, chromatic number, clique number, clique cover number and their fractional analogues is well-established for perfect graphs. Here, we study the clique k-cover number $cc_k(G)$ and the fractional clique k-cover number $cc_{fk}(G)$ of a graph G. We relate $cc_{fk}(G)$ to the fractional chromatic number of the complement $\overline{G}$, obtaining a Nordhaus–Gaddum type result. We modify the method of Kahn and Seymour, used in the proof of the fractional Erdős–Faber–Lovász conjecture, to derive an upper bound on $cc_{fk}(G)$ in terms of the independence number $\alpha(G')$ of a particular induced subgraph G' of G. When G is perfect, we get the sharper relation $cc_{fk}(G) = kcc_1(G) = k\alpha(G) \leq cc_k(G)$. This is in line with a result of Grötschel, Lovász, and Schrijver on clique covers of perfect graphs. Moreover, we derive an upper bound on the fractional chromatic number of any graph, which is tight for infinitely many perfect as well as non-perfect graphs. This is joint work with Daya Gaur (Lethbridge).

EVERYONE IS WELCOME!

Visit the seminar web page at
http://www.cs.uleth.ca/∼nathanng/ntcoseminar/

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