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2-Limited Packings of Box Product Graphs

For a fixed integer k, a set of vertices B of a graph G is a k-*limited packing* of G provided that the closed neighourhood of any vertex in G contains at most k elements of B. The size of a largest possible k-limited packing in G is denoted $L_k(G)$ and is the k-limited packing number of G. In this talk, we investigate the 2-limited packing number of box products of paths. We show that the function \Delta[L_2(P_k \square P_n)] = L_2(P_k \square P_n) -L_2(P_k \square P_{n-1}) is eventually periodic, and thereby give closed formulas for L_2(P_k \square P_n), $k = 1, 2, \ldots, 5$. The techniques we use are suitable for establishing other types of packing and domination numbers for box products of paths and, more generally, for graphs of the form H \square P_n.

Primary author: Dr CLARKE, Nancy E. (Acadia University)

Co-author: Dr GALLANT, Robert P. (Grenfell Campus, Memorial University)

Presenter: Dr CLARKE, Nancy E. (Acadia University)