

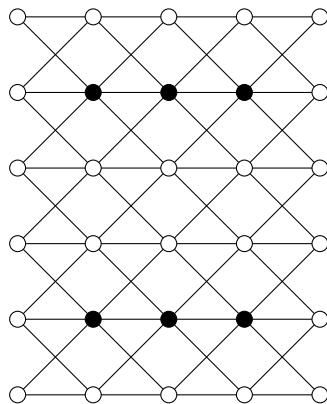
VCU Discrete Mathematics Seminar

Domination in the semi-strong product of graphs

Dr Kevin McCall
(VCU!)

Wednesday, Feb. 7
1:00-1:50 EST

In person! in 4145 Harris Hall, and Zoom @
<https://vcu.zoom.us/j/92975799914>
password=graphs2357



The semi-strong product of graphs G and H , denoted $G \underline{\times} H$, is a way of forming a new graph from the graphs G and H . The vertex set of the semi-strong product is the Cartesian product of the vertex sets of G and H , $V(G) \times V(H)$. The edges of $G \underline{\times} H$ are determined as follows: $(g_1, h_1)(g_2, h_2) \in E(G \underline{\times} H)$ whenever $g_1 g_2 \in E(G)$ and $h_1 h_2 \in E(H)$ or $g_1 = g_2$ and $h_1 h_2 \in E(H)$.

A **dominating set** of a graph G is a set of vertices, D , such that every vertex of G is either contained in D or adjacent to a vertex of D . The cardinality of a minimum dominating set of G is called the **domination number** of G and denoted $\gamma(G)$. A natural problem is to determine the domination number of a graph product in relation to the domination number of its factors has been a subject of investigation. We determine the domination number of the semi-strong product of a complete graph, a path, and a cycle with a connected graph. We also discuss a general upper bound for the domination number of the semi-strong product, and a connection with a chessboard problem.

For the DM seminar schedule, see:

<https://go.vcu.edu/discrete>