MACKENZIE CARR, Simon Fraser University

Digital Convexity in Cycles and Cartesian Products

Given a finite set V, a *convexity*, $\mathcal{C}$, is a collection of subsets of V that contains both the empty set and the set V and is closed under intersections. The elements of $\mathcal{C}$ are called *convex sets*. The *digital convexity* on the vertex set of a graph, originally introduced as a tool for processing digital images, is defined as follows: a subset $S \subseteq V(G)$ is digitally convex if, for every $v \in V(G)$, we have $N[v] \subseteq N[S]$ implies $v \in S$. Or, equivalently, S contains every vertex for which it is a local dominating set. In this talk, we discuss the use of cyclic binary strings and certain types of $n \times m$ binary arrays to enumerate the digitally convex sets of the k^{th} power of a cycle and of the Cartesian product of paths, $P_n \Box P_m$.