**The containment-intersection number**

B. Baloff (Whitman College), G. Isaak (Lehigh University), L. Langley, and S. Merz* (University of the Pacific)

Let $G$ be a graph and let $k : E(G) \to \{C, I\}$ be an edge coloring of $G$ with two colors. We say $(G, k)$ is a **containment-intersection** graph provided there exists a collection of nonempty, distinct sets $\Sigma$ and a bijection $S : V(G) \to \Sigma$ so that for all $xy \in E(G)$,

- $k(xy) = C$ if and only if $S(x) \subset S(y)$ or $S(y) \subset S(x)$, and
- $k(xy) = I$ if and only if $S(x) \cap S(y) \neq \emptyset$ but $S(x) \not\subset S(y)$ and $S(y) \not\subset S(x)$.

The ground set of $\Sigma$ is $\cup_{S \in \Sigma} S$. Given a containment-intersection graph $(G, k)$, the containment-intersection number, denoted by $ci(G, k)$, is the minimum cardinality of such a ground set over all representations of $(G, k)$ as a containment-intersection graph. The analogous invariant is well-studied for intersection graphs. We give $ci(G, k)$ for containment-intersection graphs $(G, k)$, where $G$ is triangle-free or co-bipartite.

**Keywords:** intersection graph, containment graph, intersection number, edge coloring