

Containment-intersection Graphs of Disks and Intervals

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Let G be a graph and let $k : E(G) \rightarrow \{c, i\}$ be an edge coloring of G with two colors. We say (G, k) is a **containment-intersection** graph provided there exists a collection of sets Σ and a bijection $S : V(G) \rightarrow \Sigma$ 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 $S(y) \not\subset S(x)$.

We make some observations about containment-intersections graphs when Σ is a collections of general sets and then look at two special cases: when each $S \in \Sigma$ is a disk in the plane and when each $S \in \Sigma$ is an interval of the real line.

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