

Pseudo transitivity and intersection graphs

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A directed graph $G = (V, E)$ is strongly pseudo transitive if there is a partition $\{A, E - A\}$ of E so that graphs $G_1 = (V, A)$ and $G_2 = (V, E - A)$ are transitive, and additionally, if $ab \in A$ and $bc \in E$ implies that $ac \in E$. An undirected graph is co-strongly pseudo transitive if its complement has an orientation which is strongly pseudo transitive.

We show that some important classes of intersection graphs including polygon circle graphs (that includes classes of chordal, circular arc, circle, and outer planar graphs), interval filament graphs, and tree filament graphs are co-strongly pseudo transitive. Additionally, the intersection graphs of axis parallel rectangles intersecting a diagonal line from bottom are co-strongly pseudo transitive. It is noted that if the representation models are given and fixed, then, there are graphs which are co-strongly pseudo transitive but not necessarily co- \mathcal{G} -mixed, and vice versa. Computational consequences are presented.

Keywords: intersection graphs, co-comparability graphs, pseudo transitive graphs.