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Representing Planar Graphs By Homothets of Convex Sets

We discuss the relationship between planar graphs and overlap and intersection graphs of homothetic copies of a fixed convex set S (i.e., S -overlap and S -intersection graphs). We show that for every convex set S , every planar graph is an S -overlap graph. Our overlap results further imply that for many convex sets S (essentially those which are neither “trapezoidal” nor “hexagonal”), every planar graph is an S -intersection graph. The foundations of our results are the Convex and Square Packing Theorems of Schramm (1990,1993).

This is joint work with Torsten Ueckerdt.