Graz University of Technology

Institut für Optimierung und Diskrete Mathematik

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Extremal parameters in critical and subcritical graph classes

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In recent years there has been increasing interest in the asymptotic analysis of (several classes of) planar maps and planar graphs. This was initiated by bijective methods (e.g. the Shaeffer bijection), generating function methods (e.g. Gimenez and Noy's result on the asymptotics of number of planar graphs) and the search for probabilistic limiting objects (e.g. the Brownian map by Le Gall). In particular in the discussion of several planar graph classes (like series-parallel graphs or labelled planar graphs) a dichotomy between a "critical" and "subcritical" behaviour between 2-connected and connected graphs was observed. Informally a graph class is subcritical when all 2-connected components are small (i.e., at most of log n - size) and one observes a "treelike structure". Conversely a graph class is critical when the largest 2-connected component is comparable to the size of the whole graph.

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