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Péter Csikvári* (peter.csikvari@gmail.com). *Extremal regular graphs*. Preliminary report.

Let $P(G)$ be a graph parameter which has size roughly $c^{v(G)}$, where $v(G)$ is the number of vertices of a graph G . Examples include the number of spanning trees, number of (perfect) matchings or the number of homomorphisms of G into a fixed graph H . We will be interested in the following type of questions: what is $\sup P(G)^{1/v(G)}$ or $\inf P(G)^{1/v(G)}$ among d -regular (bipartite) graphs. In many (but far from all) instances the extremal graph is one of the following three graphs: the complete graph K_{d+1} , the complete bipartite graph $K_{d,d}$, and perhaps surprisingly, the infinite d -regular tree \mathbb{T}_d . We will be especially interested in the latter case as this requires some intricate ideas like combinations of extremal and graph limit theoretical arguments.

This talk will be a survey talk based on many papers. Some of the papers are joint with Emma Cohen, Will Perkins and Prasad Tetali. (Received February 15, 2016)