THE MINIMUM BISECTION IN THE PLANTED BISECTION MODEL

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Abstract. In the planted bisection model a random graph $G(n, p_+, p_-)$ with $n$ vertices is created by partitioning the vertices randomly into two classes of equal size (up to $\pm 1$). Any two vertices that belong to the same class are linked by an edge with probability $p_+$ and any two that belong to different classes with probability $p_- < p_+$ independently. The planted bisection model has been used extensively to benchmark graph partitioning algorithms. If $p_+ = 2d_+/n$ for numbers $0 \leq d_- < d_+$ that remain fixed as $n \to \infty$, then w.h.p. the “planted” bisection (the one used to construct the graph) will not be a minimum bisection. In this talk we derive an asymptotic formula for the minimum bisection width under the assumption that $d_+ - d_- > c\sqrt{d_+ \ln d_+}$ for a certain constant $c > 0$.

(Joint work with Amin Coja-Oghlan, Oliver Cooley, and Kathrin Skubch)