

# 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  $p_{\pm} = 2d_{\pm}/n$  for numbers  $0 \leq d_- < d_+$  that remain fixed as  $n \rightarrow \infty$ , 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)