

Geometric Graph Theory

14. Exercise, 2. June, 2010
Wednesday 1015-1145*, MA A1 10

Definition: The bisection width, $b(G)$, is the minimum number of edges needed to delete such that the size of every connected component becomes at most $2n/3$.

1. Show a graph whose bisection width is big but we can cut it into two equal parts with the deletion of a vertex.
2. In the definition the constant $2/3$ seems arbitrary. Show a graph whose bisection width is small, but if we want to split it to components of size at most $3n/5$, then we need to delete a lot of edges.
3. Prove that for a C_6 -free graph G on n vertices and $e \geq 99999n$ edges $cr(G) = \Omega(e^5/n^4)$ using that $ex(n, C_6) = O(n^{4/3})$.
4. * Prove it for other properties...

New exercises and notes can be found at <http://dcg.epfl.ch/page85509.html>
Solutions to selected homeworks should be handed in at the beginning of the next session or sent to doemoe-toer.palvoelgyi@epfl.ch.