Mathematics and CS Seminar

GeomTop Seminar: Connectivity of the Flip-Graph of Triangulations

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Host: Uli Wagner

We investigate the connectivity of the flip-graph of all (full) triangulations of a given finite planar point set \( P \) in general position and prove that, for \( n := |P| \) large enough, both edge- and vertex-connectivity are determined by the minimum degree occurring in the flip-graph, i.e. the minimum number of flippable edges in any triangulation of \( P \). It is known that every triangulation allows at least \( \frac{n-4}{2} \) edge-flips.

This result is extended to so-called subtriangulations, i.e. the set of all triangulations of subsets of \( P \) which contain all extreme points of \( P \), where the flip operation is extended to bistellar flips (edge-flips, and insertion and removal of an inner vertex of degree three). Here we prove \( (n-3) \)-edge-connectedness (for all \( P \)) and \( (n-3) \)-vertex-connectedness of \( n \) large enough ((n-3) is tight, since there is always a subtriangulation which allows exactly \( n-3 \) bistellar flips). This matches the situation known (through the secondary polytope) for so-called regular triangulations.

(joint work with Uli Wagner, IST Austria)

Wednesday, March 6, 2019 01:00pm - 02:15pm
IST Austria Campus Mondi Seminar Room 3, Central Building

This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage: http://ist.ac.at/fileadmin/user_upload/pdfs/IST_shuttle_bus.pdf The IST Shuttle bus is marked IST Shuttle (#142) and has the Institute Logo printed on the side.