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Irreducible triangulations of surfaces

Let S be a closed surface with Euler genus $\gamma(S)$. An irreducible triangulation of S is a simple graph G without contractible edges embedded on S so that each face is a triangle and any two faces share at most two vertices. Nakamoto and Ota proved that the number n of vertices of an irreducible triangulation of S is bounded above by $171\gamma(S) - 72$. This bound was improved by Cheng, Dey, and Poon to $n \leq 120\gamma(S)$ for orientable surfaces. We improve these bounds to $n \leq 106.5\gamma(S) - 33$ for any closed surface S.

This is joint work with Gloria Aguilar Cruz at the Department of Mathematics of CINVESTAV.