XIAONAN LIU, Georgia Institute of Technology
Number of Hamiltonian cycles in planar triangulations

Hakimi, Schmeichel, and Thomassen conjectured in 1979 that if G is a 4-connected planar triangulation with n vertices then G contains at least $2(n-2)(n-4)$ Hamiltonian cycles, with equality if and only if G is a double wheel. Alahmadi, Aldred, and Thomassen recently proved that there are exponentially many Hamiltonian cycles in 5-connected planar triangulations. We consider 4-connected planar n-vertex triangulations G that do not have too many separating 4-cycles or have minimum degree 5. We show that if G has $O(n/\log_2 n)$ separating 4-cycles then G has $\Omega(n^2)$ Hamiltonian cycles, and if $\delta(G) \geq 5$ then G has $2^{\Omega(n^{1/4})}$ Hamiltonian cycles.