

VORONOI TESSELLATIONS OF RANDOM EMBEDDED GRAPHS

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Pick a very large random plane graph, pick two random vertices in it, and partition the graph into two "Voronoi" cells centered in these two vertices, for the graph distance. Then the fraction of vertices that fall in the first region converges in law to a uniform variable on $[0,1]$ when the size of the graph goes to infinity. This difficult theorem is just one case (proved recently by Guitter) of conjectures I made that connect some topics in mathematical physics (the double scaling limit of the 1-matrix model) to the purely bijective approaches to count graphs on surfaces. I will tell the story behind these conjectures, discuss partial results and, if time permits, related results obtained jointly with Addario-Berry, Angel, Fusy, and Goldschmidt for different models of (sparse) random graphs.