BOJAN MOHAR, Simon Fraser University

50 years of the Ringel and Youngs Map Colour Theorem

What is the smallest genus of a surface in which the complete graph K_n can be embedded? This question, known as the Heawood problem, was resolved in 1968 by Ringel and Youngs and is henceforth known as the Map Colour Theorem. The methods used in the solution gave birth to topological graph theory.

In the 1990s, Archdeacon and Grable and Rodl and Thomas proved that the genus of random graphs behaves very much like the genus of complete graphs.

The talk will outline recent results (joint work with Yifan Jing) about genus embeddings of dense graphs building on the above-mentioned work. These results, which were originally motivated by algorithmic questions, use contemporary notions of quasi-randomness and graph limits, and lead to interesting new problems in topological graph theory.