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Constrained graph counting

Many interesting topological invariants can be expressed as sums over sets of graphs. I will report on a recent joint work with Karen Vogtmann in which such techniques were applied to proof a conjecture on the Euler characteristic of Out(F_n). The combinatorial part of the proof is a generalized graph counting lemma, which enables the enumeration of constrained sets of graphs. I will illustrate this key step and highlight the appearance of chord diagrams.