

PACKING SPARSE GRAPHS

PETER ALLEN

Given a family of graphs G_1, \dots, G_t and a graph H , a packing of the G_i into H means a collection of embeddings of the graph G_i into H such that each edge of H is used in at most one embedding. Equivalently, this means a colouring of the edges of H with $t + 1$ colours, where the colour i edges form a graph isomorphic to G_i for each $1 \leq i \leq t$ and the colour $t + 1$ edges are left over. The question of what families one can pack into a large complete graph, or into a typical large graph, has been quite actively studied recently (in particular motivated by conjectures of Gyarfás and Ringel from the 60s on packing families of trees). We now have quite a good understanding of when one can expect to find an almost-perfect packing (i.e. all but a tiny fraction of edges are used in the packing), and some idea of how to find perfect packings (when all edges are used in the packing). I will outline one approach to these kinds of problem, using a simple probabilistic process. This is joint work with Julia Boettcher, Dennis Clemens, Jan Hladky, Diana Piguet and Anusch Taraz.