Title: Minimum Decompositions of Graphs

Abstract

Given graphs G and H, an *H-decomposition* of G is a partition of the edge set of G such that each part is either a single edge or forms a graph isomorphic to H. Let $\phi_H(n)$ be the smallest number, ϕ, such that any graph G of order n admits an H-decomposition with at most ϕ parts.

The exact computation of $\phi_H(n)$ for an arbitrary H is still an open problem. Bollobás [Math. Proc. Cambridge Philosophical Soc. **79** (1976) 19–24] accomplished this task for cliques. We will determine the asymptotic of $\phi_H(n)$ for any fixed graph H as n tends to infinity. When H is bipartite, we determine $\phi_H(n)$ with a constant additive error and provide an algorithm returning the exact value with running time polynomial in $\log n$.

This is joint work with Oleg Pikhurko, Carnegie Mellon University, USA.