New Results on List Partitions

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(joint work with Tomas Feder, Sula Klein and Rajeev Motwani)

I will discuss a common generalization of several graph partition problems, from homogeneous sets (and pairs) to clique cutsets, skew cutsets, and joins. The list version of this problem allows a uniform approach which leads to quasipolynomial (sometimes polynomial) algorithms for all problems with at most four parts, except those containing the stable cutset and the three–colouring problems (which are NP–complete).

This implies in particular a quasipolynomial algorithm for the skew cutset problem.