

# An Excluded Minor Characterization of Seymour Graphs.

Zoltán Szigeti  
Laboratoire G-SCOP

## Abstract

A graph  $G$  is said to be a *Seymour graph* if for any edge set  $F$  there exist  $|F|$  pairwise disjoint cuts each containing exactly one element of  $F$ , provided for every circuit  $C$  of  $G$  the necessary condition  $|C \cap F| \leq |C \setminus F|$  is satisfied.

A first coNP characterization of Seymour graphs has been shown by Ageev, Kostochka and Szigeti, the recognition problem has been solved in a particular case by Gerards, and the related cut packing problem has been solved in the corresponding special cases. In this talk, we show new minor-producing operations that keep this property, and prove excluded minor characterizations of Seymour graphs: the operations are the contraction of full stars and that of odd circuits. This sharpens the previous results, providing at the same time a simpler and self-contained algorithmic proof of the existing characterizations as well, still using methods of matching theory and its generalizations.

Joint work with Alexander Ageev, Yohann Benchetrit, András Sebő