

Advertisement: Bachelor's Thesis

Topic: The mathematics of Svatopluk Poljak

Supervisor: Prof. Dr. Stefan Glock

Description: Svatopluk Poljak (1951–1995) was a Czech mathematician working in discrete mathematics and combinatorial optimization. He made important contributions to these areas, which is underlined, for instance, by the fact that the *Handbook of Semidefinite Programming* was devoted to his memory and that a lecture series at the University of Passau (where he was a professor) is named in his honour.

Thesis goals: The aim of this project is to survey the mathematical contributions of Poljak, to describe the different areas he worked in, and to showcase his contributions and how his work has influenced the field since then.

Potential articles (list not exhaustive):

- C. Delorme and S. Poljak, Laplacian eigenvalues and the maximum cut problem, *Mathematical Programming* 62 (1993), 557–574.
- J. Nešetřil and S. Poljak, On the complexity of the subgraph problem, *Comment. Math. Univ. Carolin.* 26 (1985), 415–419.
- S. Poljak and V. Rödl, On the arc-chromatic number of a digraph, *Journal of Combinatorial Theory Series B* 31 (1981), 339–350.
- M. X. Goemans and D. P. Williamson, Improved approximation algorithms for maximum cut and satisfiability problems using semidefinite programming, *Journal of the ACM* 42 (1995), 1115–1145.
- Y. Shitov, Counterexamples to Hedetniemi's conjecture, *Annals of Mathematics* 190 (2019), 663–667.

Further links:

-  <https://link.springer.com/article/10.1007/BF02614430>
-  <https://www.fim.uni-passau.de/en/discrete-mathematics/poljak-lecture>
-  <https://www.digital.uni-passau.de/en/beitraege/2025/poljak-lecture-series>
-  <https://mathscinet.ams.org/mathscinet/author?authorId=192349>