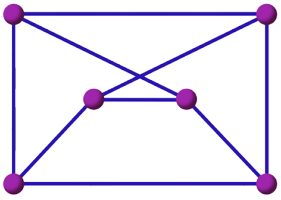

SEMINARIUM
MATEMATYKA DYSKRETNA

wtorek, 23 kwietnia 2024 r., godz. 12:30, s. 612 C7

Hierarchical product graphs

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In 1974 Schwenk introduced a binary operation of graphs to study their spectra. This operation was generalized by Godsil and McKay in 1978 for the investigation of spectra of trees. In 2009 it was rediscovered and generalized by Barrière, Comella et al. in 2009, under the names hierarchical and generalized hierarchical product.

The products are neither commutative nor associative. Nonetheless, for n-ary versions of both products, unique prime factorization was claimed in 2017 by Anderson et al. for finite connected graphs, but the proof is not correct. We correct the result and extend it to connected rayless infinite graphs.

Furthermore we show that for several of these products unique n-th roots exist for disconnected graphs, despite the fact that unique prime factorization does not hold for disconnected graphs.

This second, algebraic part, is joint work with Daniel Smertnig and Igor Klep from Ljubljana, the part on prime factorizations is joint work with Rafał Kalinowski and Monika Pilśniak.