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Local Theorems in Combinatorial Tiling

A locally finite face-to-face tiling of euclidean d -space by convex d -polytopes is said to be combinatorially crystallographic if its combinatorial automorphism group has only finitely many orbits on the tiles. We describe a new Local Theorem, which characterizes combinatorially crystallographic tilings in terms of large enough neighborhood complexes (centered coronas) of tiles. This generalizes the Local Theorem for Monotypic Tilings, which gives necessary and sufficient conditions for combinatorial tile-transitivity.

Both results are joint work with Nikolai Dolbilin.