1026-52-125   **Egon Schulte*** (`schulte@neu.edu`), Northeastern University, Department of Mathematics, Boston, MA 02115. *Combinatorial Multihedrality in Tilings.* Preliminary report.

A locally finite face-to-face tiling of euclidean space by convex polytopes is called combinatorially multihedral (or combinatorially crystallographic, or combinatorially periodic) if its combinatorial automorphism group has only finitely many orbits on the tiles. We describe a local characterization of combinatorial multihedrality of 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. We also discuss a combinatorial analogue of aperiodicity of prototile sets. (Received February 22, 2007)