Mathematics > Geometric Topology

Morse matchings on polytopes

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We show how to construct homology bases for certain CW complexes in terms of discrete Morse theory and cellular homology. We apply this technique to study certain subcomplexes of the half cube polytope studied in previous works. This involves constructing explicit complete acyclic Morse matchings on the face lattice of the half cube; this procedure may be of independent interest for other highly symmetric polytopes.

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