

Geometric transition from hyperbolic to anti-de Sitter structures in dimension four

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Abstract. We provide the first examples of geometric transition from hyperbolic to anti-de Sitter structures in dimension four, in a fashion similar to Danciger's three-dimensional examples. The main ingredient is a deformation of hyperbolic 4-polytopes, discovered by Kerckhoff and Storm, eventually collapsing to a 3-dimensional ideal cuboctahedron. We show the existence of a similar family of collapsing anti-de Sitter polytopes, and join the two deformations by means of an opportune half-pipe orbifold structure. The desired examples of geometric transition are then obtained by gluing copies of the polytope.

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