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The maximum volume of hyperbolic polyhedra

Abstract

What is the maximum volume of hyperbolic polyhedra with fixed 1-skeleton? A classic result states that the maximum volume achieved by a hyperbolic simplex is that of the regular simplex with all vertices at infinity. Unfortunately for general polyhedra such a result would not be possible, hence it is necessary to also consider polyhedra that have vertices "beyond infinity". In this talk I will give a complete answer to this question, giving all the background necessary to state the result and giving a rough outline of the proof. Only a basic familiarity with the hyperbolic space is assumed.