Discrete isoperimetric problems in spaces of constant curvature

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It was proved by Böröczky and Peyerimhoff that among simplices inscribed in a ball in spherical and hyperbolic space, respectively, the regular simplices have maximal volume. In this lecture we show that among simplices circumscribed about a ball in hyperbolic space, the regular simplices have minimal volume. We also investigate analogous questions for d-dimensional spherical and hyperbolic polytopes with $d + 2$ vertices.