The isodiametric problem in spaces of constant curvature and its stability

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The isodiametric inequality in the Euclidean space was proved by Bieberbach and Urysohn; namely, balls maximize the volume of a convex body of given diameter. We verify the analogous statement in the spherical and hyperbolic spaces. In addition, we prove a stability version of this statement in each of the three types of spaces of constant curvature.