

# Collapsing 4-manifolds under a lower curvature bound

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In this paper we describe the topology of 4-dimensional closed orientable Riemannian manifolds with a uniform lower bound of sectional curvature and with a uniform upper bound of diameter which collapse to metric spaces of lower dimensions. This enables us to understand the set of homeomorphism classes of closed orientable 4-manifolds with those geometric bounds on curvature and diameter. In the course of the proof of the above results, we obtain the soul theorem for 4-dimensional complete noncompact Alexandrov spaces with nonnegative curvature. A metric classification for 3-dimensional complete Alexandrov spaces with nonnegative curvature is also given.

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