Action on Cantor spaces and macroscopic scalar curvature

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Abstract: We prove the macroscopic cousins of three conjectures: 1) a conjectural bound of the simplicial volume of a Riemannian manifold in the presence of a lower scalar curvature bound, 2) the conjecture that rationally essential manifolds do not admit metrics of positive scalar curvature, 3) a conjectural bound of l2-Betti numbers of aspherical Riemannian manifolds in the presence of a lower scalar curvature bound. The macroscopic cousin is the statement one obtains by replacing a lower scalar curvature bound by an upper bound on the volumes of 1-balls in the universal cover. Group actions on Cantor spaces surprisingly play an important role in the proof. The talk is based on joint work with Sabine Braun.