The radius of comparison of $C(X)$ is about half the covering dimension of X

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Abstract

Let X be a compact metric space. In 2013, Elliott and Niu proved that the radius of comparison $\mathrm{rc}(C(X))$ is, up to an additive constant, at least half the rational cohomological dimension of X. We prove that, up to a slightly worse additive constant, $\mathrm{rc}(C(X))$ is at least half the covering dimension of X. This gives new information both about spaces whose integer cohomological dimension is much greater than their rational cohomological dimension and about spaces with finite integer cohomological dimension but infinite covering dimension.

The proof is fairly short, but all vector bundles implicit in it are stably trivial.