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Asymptotic cones and Assouad-Nagata dimension

We prove that the dimension of any asymptotic cone over a metric space X does not exceed the asymptotic Assouad-Nagata dimension of X.

This improves a result of Dranishnikov and Smith who showed that $\dim(Y)$ does not exceed asymptotic Assouad-Nagata dimension of X for all separable subsets Y of special asymptotic cones of X over an exponential ultrafilter. We also show that Assouad-Nagata dimension of the discrete Heisenberg group equals its asymptotic dimension.

*This is a joint work with Jerzy Dydak