1014-46-486 **Alexander Brudnyi*** (albru@math.ucalgary.ca), Department of Mathematics and Statistics, University of Calgary, Calgary, Alberta T2N 1N4, Canada, and **Yuri Brudnyi** (ybrudnyi@math.technion.ac.il), Department of Mathematics, Technion, 32000 Haifa, Israel.

Simultaneous Lipschitz Extensions (Part I).

A subspace S of a metric space (M, d) admits a simultaneous Lipschitz extension, if there is a linear continuous operator $E : Lip(S) \to Lip(M)$ such that $Ef|_S = f$. Set $\lambda(S, M) := \inf ||E||$ and $\lambda(M) := \sup_{S \subset M} \lambda(S, M)$.

Question. What geometric properties of M imply finiteness of $\lambda(M)$.

We present several basic results which give an answer to this question for a wide range of metric spaces of various nature. These include metric trees of arbitrary cardinality, groups of polynomial growth, Gromov-hyperbolic groups, certain classes of Riemannian manifolds of bounded geometry and the finite direct sums of arbitrary combinations of these objects. On the other hand we construct an example of a two-dimensional Riemannian manifold M of bounded geometry for which $\lambda(M) = \infty$.

Our results are valid also for Banach-valued Lipschitz functions.

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