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Manor Mendel*, mendelma@gmail.com, and **Assaf Naor**. *Metric cotype*.

We introduce the notion of cotype of a metric space, and prove that for Banach spaces it coincides with the classical notion of Rademacher cotype. This yields a concrete version of Ribe's theorem, settling a long standing open problem in the non-linear theory of Banach spaces. We apply our results to several problems in metric geometry. Namely, we use metric cotype in the study of uniform and coarse embeddings, settling in particular the problem of classifying when L_p coarsely or uniformly embeds into L_q . We also prove a non-linear analog of the Maurey-Pisier theorem, and use it to answer a question posed by Arora, Lovasz, Newman, Rabani, Rabinovich and Vempala, and to obtain quantitative bounds in a metric Ramsey theorem due to Matousek. (Received July 03, 2005)