1010-52-131   **Jeffrey D. Farmer** and **William B. Johnson*** (`johnson@math.tamu.edu`), Dept. of
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Non linear p summing operators.

A number of concepts in the local theory of Banach spaces, such as type and cotype, have non linear analogues which have proven useful in studying the geometry of metric spaces. We introduce the concept of Lipschitz p summing operator, $1 \leq p < \infty$, in the hope that it also will be useful in developing metric geometry.

There is an analogue of the Pietsch factorization theorem, but the Pietsch domination theorem is not valid. It is shown that the Lipschitz p summing norm of a linear operator between Banach spaces is the same as its p summing norm.

At present, the theory of Lipschitz p summing operator is in its infancy. Is there a composition formula? Is there a non linear version of the Grothendieck factorization theorem? Are all Lipschitz maps between certain spaces Lipschitz p summing? (Received August 23, 2005)