

A biased tribute to Jean Bourgain (1954-2018)

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In 1984 and 1986, Jean Bourgain published two papers in Israel J. Math., with whom he basically founded the non-linear theory of Banach spaces. Here are the main results; we denote by T the infinite rooted binary tree, with its graph metric.

1. T has no bi-Lipschitz embedding into Hilbert space (with quantitative estimates on how an embedding of T into ℓ^2 distorts the metric).
2. A Banach space X is super-reflexive if and only if T does not embed bi-Lipschitz into X .

In joint work with Y. Cornuier and R. Tessera, we give a group-theoretic proof of the first above statement (without the quantitative estimates). The trick is to introduce group actions into the picture.