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RECTIFIABILITY OF MEASURES AND THE β_p COEFFICIENTS

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Abstract: In some former works of Azzam and Tolsa it was shown that n-rectifiability can be characterized in terms of a square function involving the David–Semmes β_2 coefficients. In the present paper we construct some counterexamples which show that a similar characterization does not hold for the β_p coefficients with $p \neq 2$. This is in strong contrast with what happens in the case of uniform n-rectifiability. In the second part of this paper we provide an alternative argument for a recent result of Edelen, Naber, and Valtorta about the n-rectifiability of measures with bounded lower n-dimensional density. Our alternative proof follows from a slight variant of the corona decomposition in one of the aforementioned works of Azzam and Tolsa and a suitable approximation argument.

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