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Uniform rectifiability, harmonic and $p$-harmonic measure: The weak-$A_\infty$ property of harmonic and $p$-harmonic measures implies uniform rectifiability. Preliminary report.

Let $E \subset \mathbb{R}^{n+1}$, $n \geq 1$, be an Ahlfors-David regular set of dimension $n$. We show that the weak-$A_\infty$ property of harmonic measure, for the open set $\Omega := \mathbb{R}^{n+1} \setminus E$, implies uniform rectifiability of $E$. More generally, we establish a similar result for the Riesz measure, $p$-harmonic measure, associated to the $p$-Laplace operator, $1 < p < \infty$. (Received September 06, 2015)