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Huovinen transform and rectifiability

A major theorem of Tolsa, building upon prior work of Mattila-Preiss, states that if $E \subset \mathbb{R}^d$ with $\mathcal{H}^s(E) < \infty$ ($s \in \mathbb{Z}$), and the s-Riesz transform associated to E exists in principal value, then the set E is s-rectifiable. It has been an open problem if the analogous theorem holds in the case of the Huovinen transform (which has kernel $K(z) = z^k/|z|^{k+1}$ in $\mathbb{C}$ for k odd) for sets of positive and finite length. In the talk we will discuss this problem.