Hausdorff dimension and principal values of singular integrals

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This is a joint work with Julia Cufi, Juan Jesus Donaire and Joan Verdera. We show that on some standard Cantor sets in the plane with Hausdorff dimension 1 and non-sigma-finite one-dimensional Hausdorff measure, the principal values of the Cauchy transform with respect to the natural probability measure exist on a set of Hausdorff dimension one, although they often fail to exist almost everywhere. I shall also discuss questions related to more general settings.