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Solving the Dirichlet and the Neumann problem at the end-point

In 1980 C. Kenig proved that for every Lipschitz domain Ω in the plane there exists $1 \leq p_0 < 2$ so that the Dirichlet problem has a solution for every $f \in L^p(ds)$ and every $p \in (p_0, \infty)$. Moreover, if $p_0 > 1$, the result is false for $p \leq p_0$. The goal of this talk is to analyze what happen at the endpoint L^{p_0}; that is, we want to look for spaces $X \subset L^{p_0}$ so that the Dirichlet problem has a solution for every $f \in X$. These spaces X will be either a Lorentz space $L^{p_0,1}(ds)$ or some Orlicz space of logarithmic type.

Similar results will be presented for the Neumann problem.

This is a joint work with Virginia Naibo and Carmen Ortiz-Caraballo.