1100-35-124 **Murat Akman*** (`murat.akman@uky.edu`), Department of Mathematics, University of Kentucky, Lexington, KY 40508. *On the Hausdorff dimension of a measure arising from a positive weak solution to a quasilinear elliptic PDE in the plane.* Preliminary report.

In this talk we study the Hausdorff dimension of a measure μ_f related to a positive weak solution, u, of a certain quasilinear elliptic partial differential equation in $\Omega \cap N$ where $\Omega \subset \mathbb{C}$ is a bounded simply connected domain and N is a neighborhood of $\partial\Omega$. u has continuous boundary value 0 on $\partial\Omega$ and is a positive weak solution to

$$\sum_{i,j=1}^{2} \frac{\partial}{\partial x_i}(f_{\eta_i\eta_j}(\nabla u(z))\, u_{x_j}(z)) = 0 \text{ in } \Omega \cap N.$$

Also $f(\eta)$, $\eta \in \mathbb{R}^2$ is homogeneous of degree p, $1 < p < 2$, and uniformly convex in the plane. Put $u \equiv 0$ in $N \setminus \Omega$. Then μ_f is the unique positive finite Borel measure, called generalized $p-$harmonic measure, with support on $\partial\Omega$.

Then it is shown that $\mu_f \ll \mathcal{H}^\lambda$ for $1 < p < 2$ where

$$\lambda(r) = r \exp A\sqrt{\log 1/r \, \log\log\log 1/r}, 0 < r < 10^6.$$

Our work generalizes work of Lewis in [L12] when the above PDE is the p-Laplacian, $1 < p < 2$, (i.e, $f(\eta) = |\eta|^p$) in the complete generalization.

[L12]: John Lewis. p-harmonic measure in simply connected domains revisited. Transactions of the American Mathematical Society, To appear. (Received February 04, 2014)