1059-35-70 **Benjamin James Jaye*** (bjjm93@mizzou.edu), Department of Mathematics, University of Missouri, Columbia, MO 65211. *Harmonic analysis techniques in nonlinear PDE.*

In this talk, we will discuss how some modern harmonic analysis methods can be applied to the study of nonlinear PDE modeled by the quasilinear p-Laplace and fully nonlinear k-Hessian operators.

In particular, we will focus on describing the global behavior of solutions to the following nonlinear equations:

$$-\Delta_p u = \sigma u^{p-1} + \omega, \quad \text{and} \quad \mathrm{F}_k(-u) = \sigma u^k + \omega,$$

where σ and ω are nonnegative Borel measures. Here Δ_p is the quasilinear p-Laplacian operator, defined by $\Delta_p u = \mathrm{div}(|\nabla u|^{p-2}\nabla u)$, and $\mathrm{F}_k(u)$ is the fully nonlinear k-Hessian operator, defined by $\mathrm{F}_k(u) = \sum_{1\leq i_1<\cdots<i_k\leq n} \lambda_{i_1} \ldots \lambda_{i_k}$, where $\lambda_1, \ldots, \lambda_n$ are the eigenvalues of the Hessian matrix of u. The results presented are joint work with Igor E. Verbitsky. (Received February 15, 2010)