1139-35-119 **Murat Akman** (murat.akman@uconn.edu), **John Lewis*** (johnl@uky.edu) and **Andrew Vogel** (alvogel@syracuse.edu). *Note on an Eigenvalue Problem.* Preliminary report.

We consider solutions $v > 0$ to certain nonlinear PDE of p Laplace type $(1 < p < \infty)$ in the cone, $K(\alpha) = \{x = (x_1, \ldots, x_n) : x_1 > \alpha|x|\} \subset \mathcal{R}^n$ with continuous boundary value zero on $\partial K(\alpha)$ when $\alpha \in [-1, 1)$. It turns out that v is of the form,

$$v(x) = v(r, \theta) = r^\lambda f(\theta), \lambda > 0,$$

provided either $\alpha \neq -1$ or $\alpha = -1$ and $p > n - 1$. Here r, θ are spherical coordinates : $x_1 = r \cos \theta, r = |x|, 0 \leq \theta \leq \pi$. During the first part of our talk we discuss what is known about the relationship between α and λ for a fixed $p > 1$ and our attempts to solve a related eigenvalue problem for a nonlinear first order differential equation when $\alpha = -1$ and $p > n - 1$. During the second part of the talk we sketch a finesse type argument which shows for $\alpha = -1$ and $p > n - 1$ that $\lambda = 1 - (n - 1)/p$. Time permitting we discuss applications of this result. (Received February 05, 2018)