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Ryan Hynd, Charles Smart and Yifeng Yu* (yyu1@math.uci.edu). *Nonuniqueness of infinity ground states.*

Let Ω be a bounded open set in \mathbb{R}^n . For $\lambda_\infty = \frac{1}{\max_{\Omega} d(x, \partial\Omega)}$, the following equation

$$\begin{cases} \max \left\{ \lambda_\infty - \frac{|Du|}{u}, \Delta_\infty u \right\} = 0 & \text{in } \Omega \\ u = 0 & \text{on } \partial\Omega \end{cases}$$

was derived by Juutinen, Lindqvist and Manfredi as the limit of equations satisfied by principal eigenfunctions of p -Laplacian equation when $p \rightarrow +\infty$. Its solutions can be viewed as principal eigenfunctions of the infinity Laplacian operator $\Delta_\infty u = u_{x_i} u_{x_j} u_{x_i x_j}$. In this talk, we present a dumbbell domain where solutions to the above equation are not unique up to multiplication by a constant. This is a joint work with Ryan Hynd and Charles Smart. (Received August 06, 2015)