1113-46-306 **Laura Anderson** and **Beata Randrianantoanina*** (randrib@miamioh.edu). *Maximal equilateral sets in finite dimensional Petty spaces.* Preliminary report.

A subset S of a normed space $(X, \|\cdot\|)$ is called equilateral if the distance between any two points of S is the same. We denote by $e(X)$ the largest size of an equilateral set in X. There has been a lot of work to estimate the value of $e(X)$ for various spaces, but many questions remain open. In particular, a conjucture that $e(\ell_p^n) = n+1$, for all $2 < p < \infty$, is open. In 1977 Petty proved that if $\dim X \geq 3$ then any equilateral set in X of size 3 can be extended to an equilateral set of size 4. Petty also showed that the space $\mathbb{R}^n$ with the norm

$$\|(x_1, \ldots, x_n)\|_{Petty} := |x_1| + \left(\sum_{i=2}^{n} |x_i|^2\right)^{\frac{1}{2}}$$

contains a maximal equilateral set S of size 4, that is the set S cannot be extended to a larger equilateral set. Note that the space $(\mathbb{R}^n, \|\cdot\|_{Petty})$ also contains an equilateral set of size $(n+1)$. In 2004 Swanepoel asked what is the value of $e(\mathbb{R}^n, \|\cdot\|_{Petty})$. In this talk I will describe possible sizes of maximal equilateral sets in $(\mathbb{R}^n, \|\cdot\|_{Petty})$. In particular, we show that $e(\mathbb{R}^n, \|\cdot\|_{Petty}) \geq n+2$, for $3 \leq n \leq 10$.

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