1068-70-288 **Doug Hardin*** (doug.hardin@vanderbilt.edu), **Ed Saff** and **Tyler Whitehouse**. *Separation and mesh-norm estimates for minimal weighted energy points on compact metric spaces.*

Let $A$ be an $\alpha$-regular compact metric space with metric $m$ (for example, $A$ could be a self-similar set with Hausdorff dimension $\alpha$). For a set of $N$ points $\omega_N = \{x_1, \ldots x_N\} \subset A$; we consider the *separation distance of* $\omega_N$ given by

$$\delta(\omega_N) := \min_{1\leq i\neq j\leq N} \cdot (x_i, x_j),$$

and the *mesh norm* (or *covering radius*) *of* $\omega_N$ *with respect to* $A$ defined by

$$\rho(\omega_N, A) := \max_{y\in A} \min_{1\leq i\leq N} \cdot (y, x_i).$$

A sequence $\{\omega_N\}_{N=2}^{\infty}$ of $N$-point configurations in $A$ is said to be *quasi-uniform* if the *mesh ratio*

$$\gamma(\omega_N, A) := \rho(\omega_N, A)/\delta(\omega_N)$$

is bounded independent of $N$.

For $s > \alpha$ and an SLP weight $w$ on $A \times A$, let $\omega_N^* := \{x_1^*, \ldots, x_N^*\} \subset A$ denote a collection of $N$ points in $A$ that minimize the weighted energy

$$\sum_{i\neq j} \frac{w(x_i, x_j)}{m(x_i, x_j)^{-s}},$$

over all $N$-point configurations in $A$. We prove that the sequence $\{\omega_N\}_{N=2}^{\infty}$ is quasi-uniform.

Our results extend separation results of Borodachov, Hardin and Saff and extend mesh norm estimates of Damelin and Maymeskul. (Received January 19, 2011)