1086-52-2347 **Sergiy V. Borodachov** and **Douglas P Hardin*** (doug.hardin@vanderbilt.edu), Department of Mathematics, Vanderbilt University, Nashville, TN 37240, and **Edward B Saff**.

Asymptotics of discrete minimum energy problems.

The problem of finding configurations of points that are "optimally-distributed" on a compact set appears in a number of guises including best-packing problems, coding theory, geometrical modeling, statistical sampling, and mesh-generation.

We consider 'ground state' point configurations $\{x_i\}_{i=1}^N$ on a set $A \subset \mathbb{R}^n$ that minimize a weighted energy functional of the form

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

for a given 'weight' function w on $A \times A$ and a parameter $s > 0$. We review classical and recent results concerning asymptotic geometrical properties of such configurations as $N \to \infty$ and discuss low-complexity methods for computing near-optimal configurations. (Received September 25, 2012)