

Title: Optimal Discrete Measures for Riesz Potentials

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Abstract: We investigate the maximal N -point polarization (Chebyshev) problem on a manifold A ; namely, finding points x_1, x_2, \dots, x_N on A that maximize the minimum on A of the discrete Riesz s -potential $\sum_{i=1}^N \frac{1}{|x-x_i|^s}$ over all N -point multi-sets. For fixed N , in the limit as the Riesz parameter $s \rightarrow \infty$, the polarization problem becomes the best-covering problem on A . We are particularly interested in the large N limit of such maximizing point configurations when $s > \dim(A)$, the so-called hypersingular case. Comparisons with minimal Riesz s -energy configurations will be discussed. Work is joint with S. Borodachov, D. Hardin, and A. Reznikov.