1094-31-144 **Igor E Pritsker*** (igor@math.okstate.edu), Department of Mathematics, Oklahoma State University, 401 MSCS, Stillwater, OK 74078. *Farthest distance function, potentials and polarization.*

We study the farthest–point distance function, which measures the distance from a point in $\mathbb{R}^d$ to a farthest point of the given compact set $E \subset \mathbb{R}^d, d \geq 2$. If $d = 2$ then the logarithm of this distance function is subharmonic, and equals the logarithmic potential of a unique probability measure with unbounded support. This fact has interesting applications to inequalities for norms of products of polynomials and sums of logarithmic potentials.

We give a new integral representation of an appropriate power of the farthest distance function as the Riesz potential of a unique unit measure, which is obtained via the Riesz decomposition theorem. The Newtonian case is included in our range of Riesz parameter. This result yields triangle inequalities for sums of Riesz potentials and estimates for Riesz polarization quantities. Furthermore, the representing measure of the farthest distance function has many interesting properties that reflect the geometry of the compact set E.

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