

**Meeting:** 1004, Bowling Green, Kentucky, SS 1A, Special Session on Numerical Analysis, Approximation, and Computational Complexity: Interdisciplinary Aspects

1004-31-261      **P. D. Dragnev\*** (dragnevp@ipfw.edu), Department of Mathematical Sciences, Indiana-Purdue University, Fort Wayne, IN 46805, and **E. B. Saff**. *Separation of minimal  $s$ -energy points on the sphere.*

Minimal energy points on the unit sphere  $S^d$  are of great interest in various areas of mathematics, such as quadrature formulas, complexity theory, numerical analysis, and have found applications in other sciences, like chemistry, physics, crystallography, morphology etc. An important area of investigation is the separation of these points. In this talk we show that minimal  $s$ -energy points are well separated for  $d > s \geq d - 2$ , which settles the problem completely in the important particular case  $d = 2$ . The explicit form of the separation constant is new even for the classical case of  $s = d - 1$ . In the process we introduce and study in detail a new minimal energy problem for spherical Riesz potentials with external fields. (Received January 25, 2005)