Point distributions on the sphere: energy minimization, discrepancy, and more.

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The quality of a finite point distribution may be measured in many different ways depending on the problem at hand: discrepancy, numerical integration, various energies, packing, etc. There are numerous connections between these topics, and we shall explore some of the lesser known ones, in particular, different versions of Stolarsky principle, which relates discrepancy on the sphere to energy minimization. We shall also discuss applications of these topics to problems in other fields (signal processing, combinatorial geometry), which can be formulated as energy minimization problems.