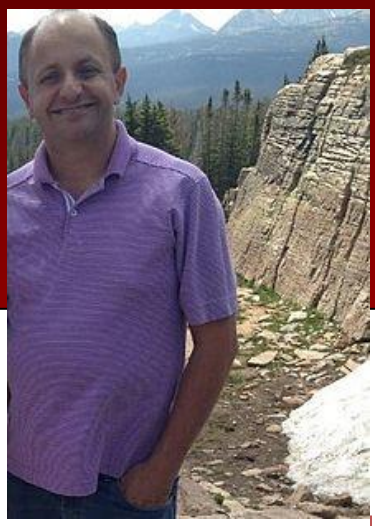

Department of Mathematical Sciences welcomes

Professor Steve Damelin
University of Michigan, Ann Arbor

February 9, 2018

Hosted by:
Dr. Alexander Its &
Dr. Paul Bleher

Tea begins at 3:00
in LD 259

Research Topic
begins at 3:30
in LD 229

Unitary Approximation and Best Packing

The classical best-packing problem is the problem of finding a configuration of N electrons on a given compact set A with the largest minimal pairwise distance. Formulated for Euclidean space R^d, this becomes the asymptotic problem of finding the largest density of an infinite collection of non-overlapping equal balls in R^d. We will discuss point sets which are well distributed over the sphere S^d as minimal Riesz configurations. There are a variety of needs for the discretization of a manifold for example statistical sampling, interpolation schemes, quantum computing, codes and random matrices. In Quantum Computation, a central question is how to approximate 2×2 unitary matrices within a tolerance of ε using finite sets. It is common practice to consider the case of SU (2), which is isomorphic to S^3. The problem then reduces to studying well distributed point distributions on S^3. We will look at lattice type constructions and pose some open questions.

ABOUT THE SPEAKER:

Steven Damelin is known for his research contributions in diverse areas including computational and pure harmonic analysis, theoretical computer science, potential theory, approximation theory, number theory, coding theory, percolation/probability, inverse problems-scattering theory, computer vision, quantum computing, and numerical analysis. Steve's PhD advisor was Doron Lubinsky at Georgia Tech, and his collaborators include Willard Miller, with whom he published the book The Mathematics of Signal Processing (Cambridge University Press), Anthony Devaney, Charles Fefferman, and others. Steve held academic positions at the Pennsylvania State University, the Institute for Mathematics and its Applications (IMA) University of Minnesota and at the University of the Witwatersrand (South Africa). Steve is working at the American Mathematical Society, and he is affiliated to the University of Michigan, Ann Arbor.

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