COLLOQUIUM
CENTER FOR APPLIED MATHEMATICS AND SCIENCE
DEPARTMENT OF MATHEMATICS
UNIVERSITY OF WEST GEORGIA

12:00 PM, MONDAY, JANUARY 9, 2017, BOYD 306

Speaker: **Dr. Richard Laugesen**
Department of Mathematics
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Title: **Optimal shapes in mathematical physics: the drum with lowest n-th frequency, and the ellipse enclosing most lattice points**

Abstract:

What shape of domain minimizes the n-th eigenvalue (frequency) of the Laplacian, for large n? Does the minimizer approach a disk as n tends to infinity? This isoperimetric type conjecture is supported by the recent discovery (Antunes and Freitas, 2013) that the rectangular drum minimizing the n-th frequency is approximately square, when n is large. Their result for rectangles relies on lattice point counting in ellipses, similar to the Gauss circle problem. I will explain the main ideas (with the help of enlightening pictures), and at the end mention my joint work with Shiya Liu extending the result to more general lattice counting problems.

All are welcome.