Title:
A Polyakov formula for angular sectors

Abstract:
In this talk I present a variational Polyakov formula for the Dirichlet Laplacian on a finite area convex angular sector in the plane. Such formula gives the derivative of the determinant of the Laplacian in the angular direction in terms of the finite part of an integral involving the heat kernel.
I start by motivating the study of determinants of Laplacians in dimension two and explain how the problem of studying sectors arose from considering determinants on polygons and surfaces with conical singularities. We use conformal transformations to differentiate the determinant with respect to the opening angle.

Time permitting, I compute the zeta-regularized determinant of rectangular domains of fixed area and prove that it is uniquely maximized by the square.
The results presented are in collaboration with Julie Rowlett.