ALMUT BURCHARD, University of Toronto
On pointwise montonicity of heat kernels

The fact that the heat kernel $K_t(x, y)$ on the standard sphere decreases with the distance between the points x and y has important consequences in Probability and Functional Analysis. In a recent paper, Alonso-Oran, Chamizo, Mas, and Martinez asked, *What are the pointwise monotonicity properties of the heat kernel on a general Riemannian manifold?* [See arXiv:1807.11072, Section 1.] I will describe current work with Angel Martinez on metrics on compact manifolds for which the heat kernel decreases monotonically as y moves along a minimal geodesic emanating from x. We prove that such metrics are extremely rare, while also providing a new example.