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Title: *Improved bounds for solutions of the heat equation in exterior domains*

Abstract

We use entropy methods to show that the heat equation with Dirichlet boundary conditions on the complement of a compact set in $\mathbb{R}^d$ shows a self-similar behaviour much like the usual heat equation on $\mathbb{R}^d$, once we account for the loss of mass due to the boundary. Giving good lower bounds for the fundamental solution on these sets is surprisingly a relatively recent result, and we find some improvements using some advances in logarithmic Sobolev inequalities. This is a work in collaboration with Alejandro Gárriz and Fernando Quirós.