

# Probability Seminar

Organizer: Tai Melcher & George Kordzakhia

Wednesday, 3:10–4:00pm, 330 Evans

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Mar 22     **Cyril Roberto**, Marne-la-Vallé

*Some functional inequalities and their application to the isoperimetric problem*

In the first part of the talk we introduce the well known Poincaré and logarithmic Sobolev inequalities, for probability measure on the real line and more generally on  $\mathbb{R}^n$ . We give some of their properties and applications, about concentration of measure phenomenon, contractivity of the underlying semi-group and isoperimetry.... On the real line, we shall see that the Poincaré inequality is closely related to the two-side exponential measure, while the logarithmic Sobolev inequality is more about the Gaussian one.

In the second part, we introduce more general functional inequalities that allow us to deal with general measure with convex potential between exponential and Gaussian. In particular we derive dimension free isoperimetric inequalities for these measures.

This is joint work with Franck Barthe (Toulouse) and Patrick Cattiaux (Nanterre and Polytechnique).