Pavia – Milano Bicocca – INdAM Ph.D. program in Mathematics

Course Title.	*Introduction to coercive inequalities with applications in analysis and probability theory*
Teacher(s).	Boguslaw Zegarlinski

Overview.
The course is an introduction to coercive inequalities with applications in analysis and probability theory.
The prerequisites are Lebesgue Measure and Integration Theory and some Functional Analysis.

When. March 29th – April 25th, 2021
Tentative Timetable.
Lessons will be taken in the following dates
March 29, 30, 31
April 7, 8, 9, 12, 13, 14, 19, 20, 21
every day starting at 11:30 AM italian time (10:30 AM London time)

Where. The course will be held only in online modality for the University of Pavia – Mathematics Department

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Further information will be published at the link
Introduction to coercive inequalities

Abstract. L_p and Orlicz spaces, convexity of norms, derivatives of norms and functional spaces; Poincaré Inequality and Entropy Bounds; Basic properties and techniques how to prove them (Including Bakry-Emery and U-bounds techniques); Estimates of moments and tails of distributions; Dissipative semigroups; Basic construction techniques; Contractivity and Hypercontractivity (Gross integration Lemma); Ergodicity in L_2 and supremum norm; Basics of applications to infinite dimensional problems; All of the above also in noncommutative spaces.

References. Support material includes:
A. Guionnet and B. Zegarlinski, Lectures on Logarithmic Sobolev Inequalities, Lecture Notes
Bakry, D., Gentil, I., Ledoux, M. Analysis and Geometry of Markov Diffusion Operators