Séminaire de mathématiques et leurs applications

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Titre: Convergence to equilibrium for semigroups in Hilbert space: an intertwining approach.

Résumé: Abstract: In this talk we will discuss the L2-convergence to equilibrium for the class of spectral-Bessel semigroups, that is (non-local and non-self-adjoint) semigroups that admit a spectral decomposition expressed in terms of biorthogonal sequences including a Bessel sequence. Under some conditions on the Hilbert space norm of these sequences, we show that the spectral representation naturally leads to the hypocoercivity phenomena introduced in [3] with explicit constants that can be interpreted as a perturbed spectral gap. We illustrate this result by investigating the class of so-called generalized Laguerre semigroups, introduced recently in [1] and [2], and which are in bijection with a set of negative definite functions. By means of intertwining techniques, we find some conditions on the associated negative definite function for the generalized Laguerre semigroup to exhibit a perturbed spectral gap estimate.

References:

[1] Pierre Patie and Mladen Savov. Cauchy problem of the non-self-adjoint Gauss-Laguerre semigroups and uniform bounds of generalized Laguerre polynomials. To appear in J. Spectral Theory, 2016.

[2] Pierre Patie and Mladen Savov. Spectral expansions of non-self-adjoint generalized Laguerre semigroups. arXiv preprint arXiv:1506.01625v2, 2016.

[3] Cédric Villani. Hypocoercivity. Number no. 950 in Memoirs of the American Mathematical Society. American Mathematical Society, Providence, R.I, 2009.