

## Mathematical Physics

# Exponential return to equilibrium for hypoelliptic quadratic systems

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*(Submitted on 12 Jun 2011 (v1), last revised 18 Oct 2012 (this version, v2))*

We study the problem of convergence to equilibrium for evolution equations associated to general quadratic operators. Quadratic operators are non-selfadjoint differential operators with complex-valued quadratic symbols. Under appropriate assumptions, a complete description of the spectrum of such operators is given and the exponential return to equilibrium with sharp estimates on the rate of convergence is proven. Some applications to the study of chains of oscillators and the generalized Langevin equation are given.

Comments: 28 pages, 4 figures

Subjects: **Mathematical Physics (math-ph)**; Spectral Theory (math.SP)

MSC classes: Primary: 35H10, 35P99, Secondary: 35Q82

Journal reference: published in J. Func. Anal. (2012)

Cite as: [arXiv:1106.2326](https://arxiv.org/abs/1106.2326) [math-ph](or [arXiv:1106.2326v2](https://arxiv.org/abs/1106.2326v2) [math-ph] for this version)

## Submission history

From: Karel Pravda-Starov [[view email](#)]

[v1] Sun, 12 Jun 2011 18:08:50 GMT (171kb,D)

[v2] Thu, 18 Oct 2012 13:33:30 GMT (174kb,D)

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