Convergence to equilibrium for subcritical solutions of the Becker–Döring equations

Bertrand Lods
Universita` di Torino

Abstract:
We will review recent results concerning the long-time behavior of the subcritical solution to the Becker-Doring equations. We show in particular the exponential convergence towards equilibrium for a large class of initial data. Our convergence result is quantitative and we show that the rate of exponential decay is governed by the spectral gap for the linearized equation, for which several bounds are provided. This improves the known convergence result by Jabin and Niethammer (2003). Our approach is based on a careful spectral analysis of the linearized Becker–Döring equation (which is new to our knowledge) in both a Hilbert setting and in certain weighted l1 spaces. This spectral analysis is then combined with uniform exponential moment bounds of solutions in order to obtain a convergence result for the nonlinear equation.
This is a joint work with J. A. Canizo (Granada University).