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The spectrum for a family of fourth order diffusions near the self-similar attractor

The thin-film and quantum drift-diffusion equations belong to a fourth-order family of evolution equations proposed by Denzler and myself as analogous to the (second-order) porous medium family. They are 2-Wasserstein gradient flows of the generalized Fisher information (just as Otto showed the porous medium to be the 2-Wasserstein gradient flow of the Reyni entropy). In this talk we describe the linearization of the fourth-order dynamics around the self-similar solution. We diagonalize this linearization by relating it to analogous problem for the porous medium equation. This yields information about the leading- and higher-order asymptotics of the fourth-order flows on R^n which — outside of special cases — were inaccessible previously. These results were obtained jointly with Christian Seis.