Otto calculus for measures of variable mass and a model from spatial ecology

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Abstract

We introduce a new metric on the set of non-negative finite measures which is related to a sort of optimal transport with the mass changing according to certain intrinsic rules. The underlying structure turns out to be much richer than a metric one, and one may, e.g., develop a variable mass version of the celebrated Otto calculus for probability measures [1]. We then consider a degenerate reaction-diffusion model from spatial ecology which is a gradient flow in our calculus, and prove exponential convergence of solutions to the steady state. This is a joint work with S. Kondratyev and L. Monsaingeon.

References