
Some Liouville type problems including a probability measure from 2D-turbulence

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Abstract

We report some results concerning elliptic equations including an exponential type non-linearity, defined on two-dimensional domains or manifolds. Such equations are motivated by the statistical mechanics description of 2D turbulence, as introduced by Onsager. We are particularly interested in the case where the variable vortex intensities and orientations are defined by a probability measure.

In particular, we study the blow-up behavior of solutions [1,4,5,6], the mass quantization and the existence of solutions by variational methods [4], the optimal Moser-Trudinger constants [3] and the existence of concentrating solutions by perturbation methods [2].

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