

Solitons and solitonic vortices as mountain passes for the Ginzburg-Landau energy in 2D strips and 3D cylinders

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We study critical points of the Ginzburg-Landau energy on 2D strips and 3D cylinders. In relation with recent experiments on fermionic and bosonic strips, we prove that there is a critical width of the strip under which the minimizer in some suitable space is the soliton while above it the minimizer is solitonic vortex (aka a vortex which behaves like a soliton in the transverse direction). We manage to go further and characterize them as a mountain pass solutions. In 3d, we present generalizations and open questions. Joint work with Amandine Aftalion.

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