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# On a nonlocal isoperimetric problem

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**Abstract**

We study a nonlocal perturbation of the volume constrained perimeter problem. The resulting nonlocal variational problem is directly related to modelling microphase separation of diblock copolymers but it may also be viewed as a mathematical paradigm for energy-driven pattern formation induced by competing short and long-range interactions.

In this talk, I will mainly present results pertaining to the second variation and stability (joint work with *Peter Sternberg*, Indiana). For the associated diffuse interface problem, I will also discuss some questions related to gradient flow dynamics and present some numerical simulations.