

On the energy driven pattern formation for local/non-local systems

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In this talk I will show symmetry breaking and pattern formation for a large class of functionals with local/non-local interactions in general dimension which appear naturally in many applications. The functionals are rotationally invariant and contain a local term penalizing interfaces, and a non-local term favouring oscillations between different phases.

The competition between short range attractive and long range repulsive terms is commonly believed to be at the base of symmetry breaking and pattern formation, though in most physical cases a rigorous proof is lacking. In a series of recent works, we give a rigorous proof of this fact, showing that for the class of functionals above minimizers are periodic stripes.