Standing waves of the complex Ginzburg-Landau equation

Flávio Dickstein

Departamento de Matemática Aplicada
Instituto de Matemática - UFRJ

We consider of the complex Ginzburg-Landau equation

$$\phi_t = e^{i\theta}\Delta\phi + e^{i\gamma}|\phi|^\alpha\phi + k\phi$$

in a domain Ω of $\mathbb{R}^N$, where $\theta, \gamma \in (-\pi/2, \pi/2)$, $k \in \mathbb{C}$, $\alpha > 0$, with $(N-2)\alpha < 4$. We show the existence of standing waves solutions $\phi(t,x) = e^{-i\omega t}u(x) \in C(\mathbb{R}, H^2(\Omega) \cap H_0^1(\Omega))$ when Ω is a bounded domain or the whole space, under supplementary assumptions on the parameters. The main tool for the proofs is the Implicit Function Theorem.