Heteroclinic solutions of Allen-Cahn type equations with a general $div(\nabla G(\nabla u))$ elliptic operator

Karol Wroński

Department of Technical Physics and Applied Mathematics, Gdańsk University of Technology, Narutowicza 11/12, 80-233 Gdańsk, Poland, e-mail:karwrons@pg.gda.pl

Abstract

We consider a generalization of the Allen-Cahn type equation in divergence form $-\mathrm{div}(\nabla \mathrm{G}(\nabla \mathrm{u}(\mathrm{x},\mathrm{y}))) + \mathrm{F_u}(\mathrm{x},\mathrm{y},\mathrm{u}(\mathrm{x},\mathrm{y})) = 0$ where G is an anisotropic, convex function satisfying suitable ellipticity and growth conditions. We prove the existence and regularity of heteroclinic solutions in the Orlicz-Sobolev space $W^{1,G}$.