

LEAST ENERGY SOLUTIONS OF A SYSTEM OF NONLINEAR SCHRÖDINGER EQUATIONS

BOYAN SIRAKOV

An important phenomenon in nonlinear optics – the propagation of incoherent light in nonlinear Kerr medium can be modeled via the following system of coupled nonlinear Schrödinger equations :

$$2ik_j \frac{\partial \psi_j}{\partial t} + \Delta_x \psi_j + \alpha k_j^2 I(x, t) \psi_j = 0,$$

where

$$I(x, t) = \sum_j \lambda_j |\psi_j(x, t)|^2.$$

We study the existence of least energy stationary solutions of this system, depending on the parameters of the system. We concentrate on nontrivial solutions, i.e. solutions with at least two nontrivial components.

UNIVERSITY OF PARIS X AND EHESS, FRANCE
E-mail address: Boyan.Sirakov@ehes.fr