MULTIPLICITY FOR SYMMETRIC
INDEFINITE FUNCTIONALS:
APPLICATION TO HAMILTONIAN AND ELLIPTIC SYSTEMS

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0. Introduction

In this article we study the existence of critical points for certain superquadratic strongly indefinite even functionals appearing in the study of periodic solutions of Hamiltonian systems and solutions of certain class of Elliptic Systems.

We first present two abstract critical point theorems for even functionals. These results are well suited for our applications, but they are interesting by their own. These theorems are then applied to the specific problems we mentioned, when the corresponding Hamiltonians are superquadratic. Critical points theory for even indefinite functionals was studied by Benci in [2], where he developed a general pseudo index theory, a variant of the classical genus theory (c.f. [10]). We want to point out that our approach is totally different from [2]. Taking advantages of the even nature of the functional we shall construct a geometric linking structure which does not require conditions near the origin (see [10] for examples of some standard linking and compare the set up of our linking in Theorem 1.1).

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