1019-35-15 **XIANJIN CHEN*** (`xjchen@math.tamu.edu`), Department of Mathematics, Texas A&M University, College Station, TX 77843, and **JIANXIN ZHOU**. *A stable method for finding multiple solutions to noncooperative elliptic systems.* Preliminary report.

We shall present in this talk our recent work on computational theory and method for finding multiple solutions to noncooperative variational elliptic systems. Those systems arise in many applications to chemical and biological phenomena, among others. The functionals associated to those systems are strongly indefinite and thus the Morse index of each critical point is infinite. To overcome this difficulty, we propose a dual characterization of saddle points of indefinite functionals by using a generalized local L-orthogonal selection. Based on this characterization, a stable numerical method is developed to solve such noncooperative elliptic systems. (Received June 20, 2006)

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