Spectral Theory and Dynamics of Quantum Systems

GRADUIERTENKOLLEG 1838

Guest Lecture

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Local uniqueness of ground states for Hartree type models

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Abstract:
We consider the generalized p-Hartree-Choquard equation in 3 dimensional case and the corresponding Weinstein type functional. The study of orbital stability of the corresponding minimizers depends essentially in the local uniqueness of these mini-mizers.

In equivalent way one can minimize the energy functional subject to the constraint fixing the L^2 norm. The uniqueness of the minimizers for the case $p = 2$, i.e. for the case of the Hartree-Choquard is well known. The main difficulty for the case $2 < p < 7/3$ is connected with the control of the L^p norm of the minimizers.

Our approach is based on the Weinstein method and the study of the spectral properties of appropriate operator L_+ associated with the second variation of the Weinstein functional.