

Boundary value problems associated with Hamiltonian systems coupled with positively- (p, q) -homogeneous systems

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In this talk, I will discuss the multiplicity of solutions for a periodic problem and Neumann type boundary value problem associated with a coupled Hamiltonian system. The systems we are coupling have completely different behaviours. The first one is a system with periodic Hamiltonian in the space variable while the second one is a positively- (p, q) -homogeneous Hamiltonian system. For the periodic problem, we need a twist assumption in order to use higher dimension Poincaré–Birkhoff Theorem, while in discussing Neumann type boundary value problem, surprisingly, we do not need any twist assumption. At the end, I will present some possible applications and open problems in this direction.

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