

Renormalized oscillation theory for Hamiltonian pencils

Alim Sukhtayev

Miami University, USA

This is a joint work with Peter Howard (Texas A&M University, College Station, USA).

Working with a general class of linear Hamiltonian systems with nonlinear dependence on the spectral parameter, we show that renormalized oscillation results can be obtained in a natural way through consideration of the Maslov index associated with appropriately chosen paths of Lagrangian subspaces. By reduction to a generalized nonlinear eigenvalue problem, we apply our results to a class of models such as magneto-hydrodynamics systems and the Saint-Venant equations.