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Title: Quantum Hydrodynamic System: Global Existence, Stability and Scattering

Abstract: In this work we consider the Cauchy problem for the quantum hydrodynamic (QHD) system, mainly in one and two dimension.
These type of models have been extensively used to investigate superfluidity, superconductivity and in the modelling of semiconductor devices.
We show global existence of weak solutions. Moreover, by introducing a novel functional which is uniformly bounded in time along the flow of solutions and controls some higher order norms of the unknowns, we provide a stability result for sequence of weak solutions satisfying those bounds.
Finally, we present some scattering properties of solutions to the QHD system.