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Common features between the quantum Boltzmann equation cold regimes and and the wave turbulence model for stratified flows

Both the quantum Boltzmann equation for bosons at very low temperature and the model for wave turbulence theory for stratified flows, exhibit many similarities. Both represent statistical flow models given by integral forms in velocity or momenta space who lack some conservation properties, while keeping the gain-loss rates structure like the classical Boltzmann equation. While both of them differ from the classical formulation of the space homogeneous Boltzmann equation, they share the structure that allow us to construct strong solutions in the space on continuous functions in time (and differentiable for positive times), with k-moments (L^1_N) in wave space. This is done using techniques of control of ODEs methods in Banach spaces by characterizing an invariant bounded, convex, closed solutions subset of integrable solutions with bounded moments in velocity space.

This is work reflecting collaborations with Ricardo Alonso, Leslie Smith, and Minh Binh Tran.