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Abstract: In this talk I will present several techniques and concepts used in the context of the mean-field and the classical limit allowing to go from the N -body Schrödinger equation to the Hartree-Fock and Vlasov equation, linked to works in collaboration with Chiara Saffirio and Jacky Chong. To understand how close these equations are in the case of singular potentials such as the Coulomb potential, one possibility is to use weak-strong uniqueness principles and understand the similarity of the models to prove the propagation of a semiclassical notion of regularity uniformly in N and h. A typical obstacle is then the lack of positivity of the Wigner transform and its few conserved quantities. A solution to this problem is to consider operators and a quantum analogue of Sobolev spaces defined using Schatten norms. The absence of commutation requires however sharp bounds on commutators of operators without assuming high regularities. (11:55 - 12:15)