MECCANICA

A CONFERENCE IN HONOR OF SANDRO GRAFFI ON HIS 65TH BIRTHDAY

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Mean-Field limit and semiclassical expansion for an $$N$\mbox{-}{\rm particle}$$ quantum system

We consider a N-particle quantum system interacting via a meanfield Hamiltonian. As $N \to \infty$, the one-particle state obeys the Hartree equation and the propagation of chaos holds. In this paper we analyze the dependence by proving that each term of the semiclassical expansion of the N-particle system agrees, in the limit, with the corresponding term associated to the Hartree equation. We work in the classical phase space by using the Wigner formalism which seems the most appropriate for the problem at hand.

(Joint work with F. Pezzotti.)