The Hartree equation for infinitely many particles

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Abstract: We consider the time evolution of a translation-invariant Fermi gas describing an infinite number of quantum particles, submitted to a small perturbation at the initial time. The system is described by a nonlinear partial differential equation, the Hartree equation, which variable is a non-compact one-body density matrix. In this talk, we prove local and global well-posedness in the associated energy space for this equation. This is joint work with Mathieu Lewin (CNRS/Cergy).