

Quantum many body systems : Cetraro, Italy 2010

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Abstrak

The book is based on the lectures given at the CIME school "Quantum many body systems" held in the summer of 2010. It provides a tutorial introduction to recent advances in the mathematics of interacting systems, written by four leading experts in the field, V. Rivasseau illustrates the applications of constructive Quantum Field Theory to 2D interacting electrons and their relation to quantum gravity, R. Seiringer describes a proof of Bose-Einstein condensation in the Gross-Pitaevski limit and explains the effects of rotating traps and the emergence of lattices of quantized vortices, J.-P. Solovej gives an introduction to the theory of quantum Coulomb systems and to the functional analytic methods used to prove their thermodynamic stability, finally, T. Spencer explains the supersymmetric approach to Anderson localization and its relation to the theory of random matrices. All the lectures are characterized by their mathematical rigor combined with physical insights.