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Special Issue Reprint

Physics of Impurities in Quantum Gases

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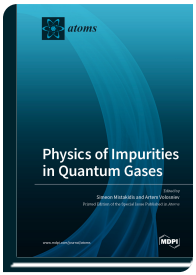

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The Special Issue contains theoretical and experimental works that report on studies of impurities in quantum gases, fundamental properties and universal aspects of quasiparticles and other related many-body phenomena. Particular focus is placed on the Fermi and Bose polarons.

The Special Issue contains ten research articles and two reviews. M. G. Skou et al. report on the experimental observation of time dynamics of Bose polarons. Theoretical studies by H. Tajima et al., L. A. Ardila, and G. Panochko and V. Pastukhov touch upon the physics of multiple impurities, in particular, the induced impurity–impurity interactions in different spatial dimensions and the formation of multi-polaron states. G. M. Koutentakis et al. elaborate on the phenomenon of temporal orthogonality catastrophe in low dimensions. Polaritons in an electron gas are discussed by M. A. Bastarrachea-Magnani et al. M. Brooks et al. describe the emergence of anyons originating from angulons. F. Scazza et al. provide an overview of our current understanding of repulsive Bose and Fermi polarons. C. D'Errico and M. G. Tarallo explicate the effects of disorder in bosonic systems. The Special Issue also includes studies of correlated atom pairs in bosonic mixtures by O. Alon, the behavior of the three-body decay rate coefficients into shallow dimers in mass-imbalanced three-atom systems by P. Giannakeas and C. H. Greene, population and angular momentum transfer in Raman-coupled Bose–Einstein condensates by K. Mukherjee et al.

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