Melezhik, Vladimir S.
Low-dimensional few-body processes in confined geometry of atomic and hybrid atom-ion traps. (English) Zbl 1437.81119

Orr, N. A. (ed.) et al., Recent progress in few-body physics. Proceedings of the 22nd international conference on few-body problems in physics, FB22, Caen, France, July 9–13, 2018. Cham: Springer. Springer Proc. Phys. 238, 47-50 (2020).

Summary: We have developed an efficient approach for treating low-dimensional few-body processes in confined geometry of atomic and hybrid atom-ion traps. It based on the split-operator method in 2D discrete-variable representation (DVR) suggested by V. Melezhik for integration of the few-dimensional time-dependent Schrödinger equation. We give a brief review of the application to resonant ultracold atomic processes and discuss our latest results on hybrid atomic-ion systems. Prospects for the application of the method in other hot problems of the physics of low-dimensional few-particle systems are also discussed.

For the entire collection see [Zbl 1432.81005].

MSC:
81U10 n-body potential quantum scattering theory
81Q05 Closed and approximate solutions to the Schrödinger, Dirac, Klein-Gordon and other equations of quantum mechanics
78A37 Ion traps

Full Text: DOI arXiv

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