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Tunneling of Two Interacting Fermions

We consider two interacting atoms subject to a one-dimensional anharmonic
trap and magnetic field gradient. This system has been recently investigated by the Heidelberg group in the experiment on two lithium-6 atoms. In the present paper the tunneling of two cold atoms, initially prepared in the center-of-mass and relative motion excited state, is explored and full time-dependent simulation of the tunneling dynamics is performed. The dynamics is analyzed for the interatomic coupling strength ranging from strong attraction to strong repulsion.

Primary author: Mr ISHMUKHAMEDOV, Ilyas (Bogoliubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research)

Co-author: Mr ISHMUKHAMEDOV, Altay (Al-Farabi Kazakh National University, K.I. Satpaev Institute of Geological Sciences)

Presenter: Mr ISHMUKHAMEDOV, Ilyas (Bogoliubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research)

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