

ICAP2022

Contribution ID: 56 Type: **Abstract of recent or ongoing work (by remote / virtual participant)**

Quantum correlations in two-orbital ultracold atomic mixtures in one-dimensional optical lattices

We theoretically study magnetic and orbital correlations in ultracold Fermi gases of alkaline-earth(-like) atoms in one-dimensional state-dependent optical lattices. In particular, with the calculated parameters in the two-orbital Hubbard model realized with ^{87}Sr , ^{171}Yb , and ^{173}Yb atoms, we employ exact diagonalization and matrix product state approaches. We calculate spatial correlation functions in the spin and orbital sectors and construct effective diagrams in the space of variable densities of atomic components in different orbital states. We also examine antiferro-orbital and antiferromagnetic couplings in the strong-coupling limit. For small systems with the fixed number of particles, we study the evolution of correlation functions with temperature.

How will you attend ICAP-27?

I am planning on virtual registration for online attendance

online poster URL

Presenter name

Valeriia Bilokon

Primary authors: BILOKON, Valeriia (Karazin Kharkiv National University, National Science Center "Kharkiv Institute of Physics and Technology"); BILOKON, Elvira (Karazin Kharkiv National University, Akhiezer Institute for Theoretical Physics, NSC KIPT); SOTNIKOV, Andrii (Karazin Kharkiv National University, Akhiezer Institute for Theoretical Physics, NSC KIPT); CICHY, Agnieszka (Faculty of Physics, Adam Mickiewicz University); BAÑULS, Mari Carmen (Max Planck Institute of Quantum Optics)

Session Classification: Abstracts by remote participants

Track Classification: Contributed posters: Degenerate gases, many-body physics, and quantum simulation