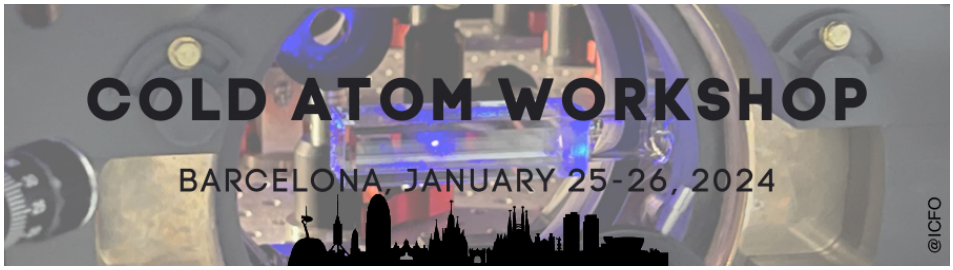

Contribution ID: **2** Type: **not specified**

Bosonic orbital Su-Schrieffer-Heeger model in a lattice of rings

Thursday 25 January 2024 10:00 (20 minutes)

We study the topological properties of interacting and non-interacting bosons loaded in the orbital angular momentum states l = 1 in a lattice of rings with alternating distances [Phys. Rev. A 108, 023317 (2023)]. At the single-particle level, the two circulation states within each site lead to two decoupled Su-Schrieffer-Heeger lattices with correlated topological phases. We characterize the topological configuration of these lattices in terms of the alternating distances, as well as their single-particle spectrum and topologically protected edge states. Secondly, we add on-site interactions for the two-boson case, which lead to the appearance of multiple bound states and edge bound states. We investigate the doublon bands in terms of a strong-link model and we analyze the resulting subspaces using perturbation theory in the limit of strong interactions. All analytical results are benchmarked against exact diagonalization simulations.

Presenter: AHUFINGER (UNIVERSITAT AUTÒNOMA DE BARCELONA), Verònica

Session Classification: Day 1