

MULTIFLAVOR PHYSICS AND GAUGE FIELDS IN ULTRACOLD ATOMS

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I will review the dramatic recent progress in quantum simulations with ultracold atoms, as well as our own work in this direction. One major new development are synthetic gauge fields, which allow simulating topological phases of matter. Rich many-body physics also arises in multiflavor gases, giving access to exotic magnetism and QCD analogs such as color superfluids. Spectroscopy and real-time dynamics have revealed novel collective modes, in particular the Higgs-amplitude mode.

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