

Abstract Submitted
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Interacting gauge theories in ultracold gases MANUEL VALIENTE, Heriot-Watt University, MATTHEW J. EDMONDS, Newcastle University, LUIS SANTOS, Hannover University, GEDEMINAS JUZELIUNAS, Vilnius University, PATRIK OHBERG, Heriot-Watt University — We consider ultracold atoms coupled to a near-resonant laser field, and show how weak interacting – yet not dynamical – gauge fields can be induced in the system. The resulting microscopic effective theory corresponds to a physical realization of one-dimensional anyons, while its semiclassical (or mean-field) approximation supports chiral solitons and persistent currents on a ring.

[1] M.J. Edmonds et al., Phys. Rev. Lett. 110, 085301 (2013)

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