

Abstract Submitted
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Realizing a fermionic superfluid state from a band insulator in an optical lattice¹ YOGESHWAR P. SARASWAT, AMAL MEDHI, VIJAY B. SHENOY, Indian Institute of Science Bangalore — We propose a route to realizing a fermionic superfluid state in an optical lattice starting from a band insulator. We show that by increasing the strength of attractive interaction between the fermions in the singlet channel, a band insulator can be driven to a superfluid state in an optical lattice. The band structure is suitably designed to avoid other competing states. We estimate the Kosterlitz-Thouless transition temperature of such a superfluid. The proposal could help the realization of a superfluid state of fermions in an optical lattice circumventing the cooling problem.

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Yogeshwar Saraswat
Indian Institute of Science Bangalore

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