

Abstract Submitted
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A Nonlinear Dirac Equation in Ultracold Bosons in an Optical Lattice¹ LINCOLN D. CARR, LAITH HADDAD, Department of Physics, Colorado School of Mines — We present a relativistic generalization of the nonlinear Schrodinger equation, the nonlinear Dirac equation (NLDE). Although different versions of a nonlinear Dirac equation have appeared in numerous fields in the past (for a recent summary, see [1]), we present a novel version of the NLDE which is of immediate experimental relevance in ultracold quantum gases and has a “speed of light” ten orders of magnitude slower than c . We discuss the symmetry properties of this new equation. [1] Wei-Khim Ng and Rajesh R. Parwani, e-print arXiv:0707.1553 (2007).

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