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Probing Nagaoka ferromagnetism in optical superlattices JAVIER VON STECHER, JILA and Department of Physics, University of Colorado, Boulder, Colorado, EUGENE DEMLER, MIKAHIL LUKIN , Physics Department, Harvard University, Cambridge-MA, 20138., ANA MARIA REY, JILA and Department of Physics, University of Colorado, Boulder, Colorado — In 1966, Nagaoka predicted that interaction-induced ferromagnetism occurs in lattices with specific geometry when there is one fewer electron than in the half-filled system. Here, we describe a controllable method for observing Nagaoka Ferromagnetism in isolated plaquettes (four lattice sites arranged in a square) created using optical superlattices. We next discuss the weakly coupled plaquettes and suggest several approaches for creating systems exhibiting itinerant ferromagnetism.

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