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Collective Excitations of Pinned Vortex Lattice of a Rotating Condensate[1] HAN PU, Rice University, LESLIE BAKSMATY, Georgia Institute of Technology, NICHOLAS BIGELOW, University of Rochester — Using state-of-the-art numerical procedures, we have calculated collective excitation spectrum of the vortex lattice state of a rotating atomic condensate subject to a co-rotating periodic pinning potential. The presence of pinning changes the structure of the excitation spectrum dramatically compared with an unpinned lattice. We have also studied the quantum depletion of the normal modes and its relation to the structure phase transition of the vortex lattice.

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