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Quantum resonance ratchet using a delta kicked rotor VIJAYASHANKAR RAMAREDDY, Physics Department, Oklahoma State University, ITZHACK DANA, Minerva Center and department of Physics, Bar-Ilan University, Ramat-Gan, Israel, ISHAN TALUKDAR, GIL SUMMY, Oklahoma State University — Quantum-resonance ratchets associated with the periodically kicked particle are experimentally realized [1]. This is achieved by using a Bose-Einstein condensate exposed to a pulsed standing light wave and prepared in an initial state differing from the usual plane wave. Both the standing-wave potential and the initial state have a point symmetry around some center and the ratchet arises from the non-coincidence of the two centers. The dependence of the directed quantum transport on the quasimomentum is studied. A theoretical analysis is used to explain the experimental results. [1] I. Dana et. al., Phys. Rev. Lett. 100, 024103 (2008).

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