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Quantum chaos using the delta kicked accelerator VIJAYASHANKAR RAMAREDDY, I. TALUKDAR, GIL SUMMY, Physics Department, Oklahoma State University, Stillwater, OK, G. BAHENAEIN, P. AHMADI, School of Physics, Georgia Institute of Technology, Atlanta, GA — The quantum delta kicked accelerator (QAM) can be realized by subjecting a particle to a periodic δ-potential and a linear potential such as gravity. The quantum δ-kicked accelerator exhibits a phenomenon of resonance which happens whenever the period of kicking is a rational fraction of the half-Talbot time. A theory of QAM occurring at integer multiples of the half-Talbot time was developed by [1] which treats the closeness of the time period to one of the primary resonance as Planck's constant and a classical mapping can be used to study the resonances. Here we extend the ϵ-classical theory to the resonances occurring at high order resonances and use the classical mapping to study these resonances. [1] S. Fishman et. al., Phys. Rev. Lett. 89, 084101 (2002); J. Stat. Phys. 110, 911 (2003).

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