

Abstract Submitted
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Sub-Fourier characteristics of a δ -kicked rotor resonance ISHAN TALUKDAR, RAJENDRA SHRESTHA, GIL SUMMY, Oklahoma State University — We experimentally investigate the sub-Fourier behavior of a δ -kicked rotor resonance by performing an overlap measurement on a Bose-Einstein condensate (BEC) exposed to a periodically pulsed standing wave. The width of the fidelity resonance peak centered at the Talbot time and zero initial momentum exhibits an inverse cube pulse number dependent scaling compared to an inverse squared mean energy measured around the same resonance. A theoretical analysis shows that the width of resonances situated around the zero of an accelerating potential depends on the inverse cube of the pulse number which we verify experimentally. Such a sub-Fourier effect can find potential applications in high resolution gravity measurements.

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