

Abstract Submitted
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Comparison between two models of time-dependent absorption of matter waves¹ MAXIMILIEN BARBIER, Northumbria University, UK, MATHIEU BEAU, University of Massachusetts Boston, USA, and Dublin Institute for Advanced Studies, Ireland, ARSENI GOUSSEV, Northumbria University, UK — The interaction between an atom and a laser might give rise to transitions between two, or more, internal states of the atom. Such processes can be efficiently described within the framework of matter wave absorption, in which the laser beam is mimicked by an absorbing barrier. In this talk we present a quantitative comparison between two models describing the interaction between a non-relativistic quantum particle and a thin time-dependent absorbing barrier. The first model represents the barrier by time-dependent discontinuous matching conditions imposed on both the wave function of the particle and its spatial derivative. The second model treats the particle as a spinor submitted to a time-dependent off-diagonal δ -potential. We show the two models to be in excellent agreement in a semiclassical regime. Reference: M. Barbier, M. Beau, A. Goussev, arXiv:1510.06996, *Phys. Rev. A* (in press).

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