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Coherent acceleration of matter waves in circular waveguides OMJYOTI DUTTA, MARKKU JAASKELAINEN, PIERRE MEYSTRE, Dept. of Physics, University of Arizona — We consider the theory of coherent acceleration of matter waves in a circular waveguide. Loss of coherence during the acceleration process is modeled by taking into account excitations to higher transverse trap levels and the inclusion of classical noise in the accelerating force. The acceleration is optimized in the sense of generating a minimal amount of population in the excited mode in the perturbative limit by using a time dependent acceleration force which has the temporal profile of Blackman pulse.

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