Abstract Submitted
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Quantum theory of atom lasers TOBIAS KRAMER, Harvard University, MIRTA RODRIGUEZ PINILLA, ICFO Barcelona — We present a three-dimensional, quantum mechanical and largely analytical theory for the properties of atomic laser beams in the gravitational field. The results describe both the total emission rate and the beam profile. Depending on the trapping frequencies and the strength of interactions, the theory predicts a transverse substructure in the atomic beam. Recent experiments on atom laser beam profiles are in good agreement with the model.

References: T. Kramer and M. Rodriguez
Quantum theory of an atom laser originating from a Bose-Einstein condensate or a Fermi gas in the presence of gravity
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