

Atom interferometry for infrasound gravitational wave detection

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Atom interferometry offers a perspective for the detection of gravitational waves in a frequency band between eLISA (1) and Advanced LIGO (2). Ground based setups were considered (3), satellite missions investigated (4), and interferometer topologies developed (4,5).

We propose a novel folded triple-loop geometry for a ground based device which combines advantages of previous proposal with horizontal or vertical baselines and eliminates very strict requirements onto the atomic source. It utilizes symmetric large momentum beam splitters (6), a relaunching technique for suspending the atoms against gravity (7), and delta-kick collimation to generate atomic ensembles with very low expansion rates (8).

We will present the novel geometry and compare it to other proposed schemes.

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