

Gravitational Wave Detection at low frequency with Atom Interferometry

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Atom interferometry promises to extend the detection bandwidth of GW detectors in the mid-frequency band (10 mHz - 10 Hz), where Earth based optical detectors are limited by low frequency gravity noise. Adopting as probes arrays of atomic ensembles in free fall, and tracking their motion on geodesics with atom interferometry allows the suppression of Newtonian Noise, enables low frequency sensitivity, and opens the way toward the realization of low frequency GW detectors on Earth. I will report on the MIGA project, an atom interferometry based demonstrator for GW detection being developed in the underground environment of LSBB (Rustrel, France), and on the potential role of atom interferometry in GW astronomy.

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