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WITHDRAWN Optical atomic clocks for gravitational wave physics

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Gravitational wave (GW) astronomy has entered a new era with the direct detection of dekahertz-band GW signals by laser interferometers. As with the electromagnetic spectrum, observing gravitational waves in a range of different frequency bands will yield complementary insights into the astrophysics of gravitating objects. Gravitational waves at micro-hertz to milli-hertz frequencies can be detected using an array of optical atomic clocks on satellites, by leveraging the extreme precision available with these clocks. This method affords a technologically feasible approach to imaging the universe in a novel GW band. To enable this method, we are developing optical atomic clocks for use on board satellites, using a simplified scheme based on two-photon transitions. In this talk, I will describe the method of GW detection using optical atomic clocks, and present our progress towards building a portable clock.

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