Title:	Nanomechanical effects of light unveil photons momentum in medium
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Abstract:	Precision measurement on momentum transfer between light and fluid interface has many implications including resolving the intriguing nature of photons momentum in a medium. For example, the existence of Abraham pressure of light under specific experimental configuration and the predictions of Chau-Amperian formalism of optical momentum for TE and TM polarizations remain untested. Here, we quantitatively and cleanly measure nanomehanical dynamics of water surface excited by radiation pressure of a laser beam. We systematically scanned wide range of experimental parameters including long exposure times, angle of incidence, spot size and laser polarization, and used two independent pump-probe techniques to validate a nano- bump on the water surface under all the tested conditions, in quantitative agreement with the Minkowski's momentum of light. With careful experiments, we demonstrate advantages and limitations of nanometer resolved optical probing techniques and narrow down actual manifestation of optical momentum in a medium.
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