

Spectroscopic Measurements of the Casimir-Polder Interaction with Atoms and Molecules

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We present our recent experimental results on the near-field temperature dependence of the Casimir-Polder interaction due to the thermal excitation of surface waves [A. Laliotis et al., Nat. Commun., 5:4364 (2014)]. We also present the progress of our on-going experiment towards the demonstration of quantum near-field energy transfer from excited polaritons to atoms. Finally we discuss the prospects of measuring the Casimir-Polder interaction with more complex quantum objects, such as molecules.