

Abstract Submitted
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Thermal Effects on Quantum Sticking¹ YANTING ZHANG, DENNIS CLOUGHERTY, University of Vermont — Many-body effects on the threshold law of quantum sticking of a particle coupled to an ohmic bosonic bath are examined for finite temperature surfaces. Generalizing a variational mean-field method² previously applied to zero temperature surfaces, we obtain an explicit expression for the sticking probability of a particle with incident energy E . We find that there is a critical particle energy below which the probability of its sticking to the surface discontinuously drops to zero. We show that this singularity, whose origin is rooted by analogy to the localization transition in the spin-boson model, is experimentally accessible for ultracold particles. We provide detailed numerical results for this effect.

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²Y. Zhang and D.P. Clougherty, arXiv:1012.4405

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