

Abstract Submitted  
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**Force fluctuations of non-adherent cells: effects of osmotic pressure and motor inhibition**<sup>1</sup> SAMANEH REZVANI, CHRISTOPH F. SCHMIDT, 3rd institute of Physics- Biophysics, Georg August University of Goettingen, Germany, TODD M. SQUIRES, Department of Chemical Engineering, UCSB, USA — Cells sense their micro-environment through biochemical and mechanical interactions. They can respond to stimuli by undergoing shape- and possibly volume changes. Key components in determining the mechanical response of a cell are the viscoelastic properties of the actomyosin cortex, effective surface tension, and the osmotic pressure. We use custom-designed microfluidic chambers with integrated hydrogel micro windows to be able to rapidly change solution conditions for cells without active mixing, stirring or diluting of fluid. We use biochemical inhibitors and different osmolytes and investigate the time-dependent response of individual cells. Using a dual optical trap makes it possible to probe viscoelasticity of suspended cells by active and passive microrheology to quantify the response to the various stimuli.

<sup>1</sup>SFB 937, Germany

Samaneh Rezvani  
3rd institute of Physics- Biophysics, Georg August University of Goettingen, Germany

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