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Probing the non-equilibrium force fluctuation spectrum of actomyosin cortices in vivo TZER HAN TAN, Massachusetts Inst of Tech-MIT, ZACHARY SWARTZ, Whitehead Institute, MIT, KINNERET KEREN, Technion - Israel Institute of Technology, NIKTA FAKHRI, Massachusetts Inst of Tech-MIT — Mechanics of the cortex govern the shape of animal cells, and its dynamics underlie cell migration, cytokinesis and embryogenesis. The molecular players involved are largely known, yet it is unclear how their collective dynamics give rise to large scale behavior. This is mostly due to the lack of experimental tools to probe the spatially varying active mechanical properties of the cortex. Here, we introduce a novel technique based on fluorescent single walled carbon nanotubes to generate non-equilibrium force fluctuation spectrum of actomysion cortices in starfish oocytes. The quantitative measurements combined with a theoretical model reveal the role of stress organization in active mechanics and dynamics of the cortex.

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