

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Athermal Fluctuations of Probe Particles in Active Cytoskeletal Networks HEEV AYADE, Kyushu University, IRWIN ZAID, Oxford University, DAISUKE MIZUNO, Kyushu University — A reconstituted active cytoskeletal network consisting of an actin filament network coupled to myosins (motor proteins) have been shown to display rich in dynamical and mechanical behaviors that is often in contrast to passive, equilibrium system. The motor proteins, which spontaneously generate forces, kept the active cytoskeletal network out of equilibrium. The athermal fluctuations observed in the network are linked to the active force generation process by motor proteins which give more relevant information including the interaction with the surrounding materials. In prior studies, only the second moment of the athermal fluctuations has been investigated while the full displacement distribution of the athermal fluctuations in active cytoskeleton recently is found to be far from Gauss when observed with video microrheology. Here, we investigated the nonequilibrium statistics and dynamics of the active network by analyzing the athermal fluctuations of different probe sizes embedded in the same active system. The model developed here is based on truncated Lévy statistics which is generally observed for the force generators whose impact decays as $1/r^2$.

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Date submitted: 27 Nov 2012

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