Supplementary Material (ESI) for Soft Matter

Electronic Supplementary Information

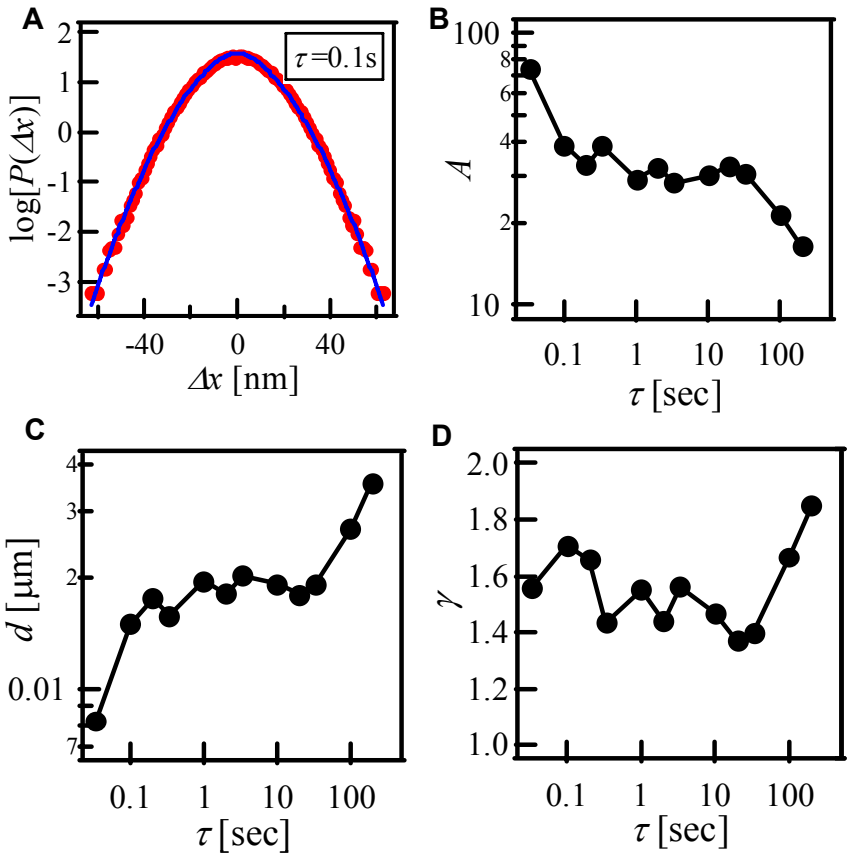
Movie 1

Thermal fluctuations of colloidal particles (*diameter*=1μm) embedded in a passive gel (*i.e.* an F-actin network without myosin, cross-linked with biotin-avidin bindings). Under the conditions of our sample preparation, the network is so rigid that we cannot observe large fluctuations. Field of view: 62 μm x 45 μm. Real time movie.

Movie 2

Mostly athermal fluctuations of colloidal particles (*diameter*=1μm) embedded in an active gel (*i.e.* cross-linked actin network with myosin). In particular, see the particle below and slightly to the left of the center of the frame. This particle moves gradually in one direction and then moves back abruptly. Field of view: 62 μm x 45 μm. Real time movie.

Supplementary Figure



(A) van Hove correlation function in a passive gel at τ=0.1sec (red circles: data accumulated for 36 particles). The blue curve shows the fit of Eq. (4) with B fixed at 0. (B - D) Lag time dependence of the fitting parameters A, d and γ in a passive gel, respectively. Due to the elastic plateau response of this rigid cross-linked network structure, τ-independent stationary values are obtained at $\tau > 0.1$ s. The increase of d (or decrease of A) at $\tau > 33$ s is due to low frequency noise (slow drift). Note that γ in passive gels is not 2 but about 1.5.