1155-62-433 **Katherine Daftari***, 3250 Phillips Hall #3, Chapel Hilil, NC 27599. *A statistically robust classifier for passive particle tracking microrheology.* Preliminary report.

Particle tracking microrheology is a widely used technique to experimentally estimate otherwise inaccessible viscoelastic properties of soft complex fluids. Extracting trustworthy information from experimental data presents the challenge of understanding the various sources of error that distort the position time series of observed particles, and consequently, distort the inference of the elastic and viscous moduli. Two significant types of error are presented in this analysis: high frequency (camera) error, and low frequency drift of the sample and embedded beads. Soon-to-be-released software mitigates these error sources while in parallel fitting the thermal fluctuations of the beads by a fractional Brownian motion (FBM) model. This statistically robust model of the particles' inherent subdiffusive behavior plus the error sources allows us to extract a two-parameter classifier of the thermal fluctuations, which in turn is transformed to estimate local viscoelastic properties around each bead. For FBM, the mean-squared-displacement (MSD) exhibits a power law: $MSD(\tau) \sim D_\alpha \tau^\alpha$. Likewise, the frequency-dependent storage ($G'(\omega)$) and loss ($G''(\omega)$) moduli exhibit power law behavior over the frequency spectrum of the measurements. (Received January 20, 2020)