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Single particle tracking for a particle in a thermo-osmotic trap
MARK NOLAN CONFESOR, PIK-YIN LAI, Department of Physics and Graduate Institute of Biophysics, National Central University, Taiwan, C.K. CHAN, Institute of Physics, Academia Sinica, Taiwan — Recently Jiang et al. (PRL 102, 2009) showed that colloidal particles in a polymer solution can be trapped by imposing a local temperature gradient. It is believe that the thermophoresis of the polymers leads to a polymer concentration gradient that drives the colloids to get trapped. We investigate the trapping force further by performing single particle tracking of a probe colloidal particle. Our system consists of Polystyrene beads immersed in PEG solution. We impose a temperature gradient by shining an IR laser to a chromium coated surface. We found the particle position distribution to have non-Gaussian tails but quiet symmetric for the radial positions. However we found quiet asymmetric distribution for the axial positions where the particle likes to stay very close to the heated surface. From the distribution we read out the trapping potential. We will present results for the dependence of the trapping potential to particle size and polymer concentration.

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