

MECHANISMS FOR ANOMALOUS DIFFUSION IN A NEMATIC ENVIRONMENT

A. Brodin^{1,2}

¹Institute of Physics, Nat. Acad. of Sci. of Ukraine
(46, *Prosp. Nauky, Kyiv 03028, Ukraine;*
e-mail: alex.brodin@gmail.com),

²National Technical University of Ukraine “KPI”
(37, *Peremogy Ave., Kyiv 03056, Ukraine*)

S u m m a r y

Mechanisms for anomalous diffusion of colloidal particles in a nematic environment are theoretically investigated. It is shown that thermal fluctuations of the nematic director may couple to the translational and orientational motions of particles, which leads to anomalous diffusion. Both superdiffusion, when the mean square displacement increases with the time faster than linearly, and subdiffusion, when this dependence is slower than linear, are possible. For micrometer-sized particles, the anomalous diffusion effects are expected on millisecond time scales.