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Tucson, AZ 85721. *Diffusive transport in two-dimensional nematics.*

One of the commonly used equations describing dynamics of the orientational degree of freedom in nematic liquid crystals is the so-called Doi equation. In essence, it is a kinetic equation for evolution of the orientation probability density of the system. I will present an analogue of this equation for spatially inhomogeneous systems and will discuss the associated problems of moment closure, reduction to Ginzburg-Landau type dynamics, and vortex dynamics. (Received February 22, 2010)