1127-35-117 **Qinfeng Li**, 150 N. University Street, West Lafayette, IN 40907, and **Changyou Wang***
(`wang2482@purdue.edu`), 150 N. University Street, West Lafayette, IN 40907. *A minimizing problem involving nematic liquid crystal droplets.* Preliminary report.

In this talk, we will describe an energy minimizing problem arising from seeking the optimal configurations of a class of nematic liquid crystal droplets. More precisely, the general problem seeks a pair (Ω, u) that minimizes the energy functional:

$$E(u, \Omega) = \int_\Omega |\nabla u|^2 + \mu \int_{\partial \Omega} f(x, u(x) \cdot \nu(x)) \, d\sigma,$$

among all open set Ω within the unit ball of $\mathbf{R}^3$, with a fixed volume, and $u \in H^1(\Omega, S^2)$. Here $f(\cdot, \cdot) : \mathbf{R}^3 \times \mathbf{R}$ is a suitable nonnegative function, which is given.

While the existence of minimizers remains open in the full generality, there has been some partial progress when Ω is assumed to be convex. In this talk, I will discuss some results for Ω that are not necessarily convex. This is a joint work with Qinfeng Li. (Received January 28, 2017)

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