1112-35-671 **Stan Alama** (alama@mcmaster.ca), Department of Mathematics & Statistics, McMaster University, Hamilton, ON L8S 4K1, Canada, **Lia Bronsard*** (bronsard@mcmaster.ca), Department of Mathematics & Statistics, McMaster University, Hamilton, ON L8S 4K1, Canada, and **Bernardo Galvão Sousa** (beni@math.toronto.edu), Department of Mathematics, University of Toronto, Toronto, ON M5S 2E4, Canada. *Weak Anchoring for 2D Liquid Crystals.*

We study the weak anchoring condition for nematic liquid crystals in the context of the Landau-De Gennes model. We restrict our attention to two dimensional samples and to nematic director fields lying in the plane, for which the Landau-De Gennes energy reduces to the Ginzburg–Landau functional, and the weak anchoring condition is realized via a penalized boundary term in the energy. We study the singular limit as the length scale parameter $\epsilon \to 0$, assuming the weak anchoring parameter $\lambda = \lambda(\epsilon) \to \infty$ at a prescribed rate. We also consider a specific example of a bulk nematic liquid crystal with an included oil droplet and derive a precise description of the defect locations for this situation, for $\lambda(\epsilon) = K\epsilon^{-\alpha}$ with $\alpha \in (0, 1]$. We show that defects lie on the weak anchoring boundary for $\alpha \in (0, \frac{1}{2})$, or for $\alpha = \frac{1}{2}$ and K small, but they occur inside the bulk domain Ω for $\alpha > \frac{1}{2}$ or $\alpha = \frac{1}{2}$ with K large. (Received August 11, 2015)