1089-35-174 **Mimi Dai*** (`mimi.dai@colorado.edu`) and **Maria Elena Schonbek**. *Asymptotic Behavior of Solutions to the Liquid Crystal System in $H^m(\mathbb{R}^3)$.*

We study the large time behavior of regular solutions to a nematic liquid crystal system in Sobolev spaces $H^m(\mathbb{R}^3)$ for $m \geq 0$. We obtain optimal decay rates in $H^m(\mathbb{R}^3)$ spaces, in the sense that the rates coincide with the rates of the underlying linear counterpart. The fluid under consideration has constant density and small initial data. (Received February 13, 2013)