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Mimi Dai* (mdai@slugmail.ucsc.edu), **Jie Qing** and **Maria Schonbek**. *Asymptotic Behavior of Solutions to the Liquid Crystal Systems in \mathbb{R}^3* .

In this paper we study the asymptotic behavior for solutions to a nematic liquid crystals system in the whole space \mathbb{R}^3 . The fluid under consideration has constant density and small initial data. The main ingredient to derive decay is Fourier splitting method which was originally introduced by M. Schonbek to study the large time behavior of solutions to Navier-Stokes equations. The asymptotic behavior of solutions to systems of nematic liquid crystals, on bounded domains with constant fluid density has been studied by several other authors using different methods. (Received January 17, 2012)