Jinrui Huang (huangjinrui1@163.com), School of Mathematics, South China Normal University, Guangzhou, Guangdong 513630, Peoples Rep of China, Fanghua Lin (linf@cims.nyu.edu), CIMS, New York University, New York, NY 10012, and Changyou Wang*, Department of Mathematics, University of Kentucky, Lexington, KY 40506. Regularity and existence of global solution of the Ericksen-Leslie system in R². Preliminary report.

I will discuss the regularity theorem for suitable weak solutions to the Ericksen-Leslie system in R^2 . Building on such a regularity, we then establish the existence of a global weak solution to the Ericksen-Leslie system in R^2 for any initial data in the energy space, under the physical constraint conditions on the Leslie coefficients ensuring the dissipation of energy of the system, which is smooth away from at most finitely many times. (Received July 27, 2013)