



Duke Kunshan University Mathematical Research Seminar Series

On the molecular theory of liquid crystals

Prof. Yuning Liu, NYU Shanghai

Venue: DKU Academic Building 1084

Date: 11am-12pm, Thursday, 13 September 2018

About the speaker:

Yuning Liu is a Visiting Assistant Professor of Mathematics at NYU Shanghai. Prior to joining NYU Shanghai, he was assistant professor of mathematics at Universität Regensburg, Germany. He holds a Ph.D from Institut Élie Cartan Nancy in France.

<https://shanghai.nyu.edu/academics/faculty/directory/yuning-liu>

Abstract: In this presentation, we shall start by an introduction to the molecular theory of liquid crystal, such as the Maier-Saupe theory in the static case and the Doi-Onsager theory for the dynamics. Then we shall discuss their connections to the Landau-De Gennes theory and the Oseen-Frank theory. The emphasis will be the theorem on the classification of ground state of Maier-Saupe energy, obtained by Liu, Zhang and Zhang, Fatkullin and Slastikov independently. As an application, we discuss the spatial inhomogeneous Doi-Onsager equation and its small Deborah number asymptotic to Eriksen-Leslie system.

