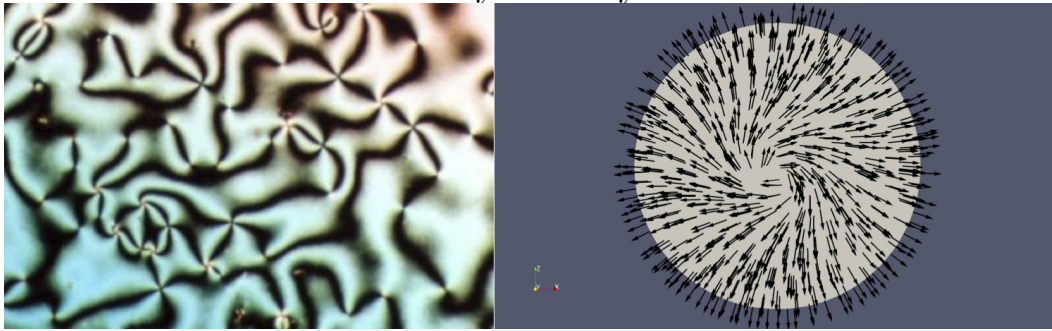# Student Research Talks (StReeTs)
Department of Mathematics, George Mason University

Modeling and Computation of Liquid Crystal Problems

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Abstract

Liquid crystals are materials that experience intermediate phases of matter whose mathemati- cal description presents analytical and computational challenges. The first half of this talk will be dedicated to a numerical method for minimizing the Frank Oseen energy of liquid crystals. Our method is able to model topological defects in liquid crystal and handle the many different elastic constants, not previously covered in the literature. We'll present analysis of the method as well as computations. The second half of the talk will cover liquid crystal elastomers, which are materials where a liquid crystal is coupled with a rubbery material. When actuated with heat, the interaction of the liquid crystal with the rubber creates complex shapes. We present a numerical method to minimize the stretching energy developed by Ozenda, Sonnet, and Virga (2020). We illustrate the geometric effects of defects via numerical computations as well as approximate special solutions.

Date: Friday April 15, 2022
Time: 2:30pm–3:20pm
Place: Expl 4106
Zoom: See https://streets-gmu.wikidot.com for Zoom link or scan below: