Mechanical response and microstructures in liquid crystal elastomers: small strain theories

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In this talk, we will present recent theoretical and numerical results for models of nematic elastomers within the small strain approach.
While strains exhibited by nematic elastomers are usually large, there are cases where this is not so, and the early modeling approaches were using this framework.
In fact, the main reason for the developing small strain theories for nematic elastomers is the clear geometric structure of the resulting energy landscape.
We will exploit this structure to discuss material instabilities and stress-strain diagrams, and to suggest possible generalizations to more realistic models.