Analysis of Liquid Crystal Flows and Poroelastic Media

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In this talk we analyze first two models describing nematic liquid crystal flows: The de Gennes Q-Tensor model and the Ericksen-Leslie model. Of special importance in the Ericksen-Leslie model is a fully nonlinear boundary condition which is necessary to guarantee that the system fulfills physical principles.
We also consider the interaction between a fluid and a porous medium described by the Biot system. The coupling conditions at the interface here are the Beaver-Joseph or the Beaver-Joseph-Saffman conditions.

This is joint work with T. Binz, A. Hussein, J. Li, A. Roy, M. Wilke and M. Wrona.