1112-70-265 **Mark Wilkinson*** (mwilkins@cims.nyu.edu), Courant Institute of Mathematical Sciences, 251 Mercer Street, New York, NY 10012. *On Collisions of Hard Nematic Particles.*

It is an interesting challenge to understand how observable phenomena in nematic liquid crystals arise from properties of their constituent molecules. Commonly, nematic liquid crystals are modelled at the molecular level by long, rod-like rigid bodies such as hard ellipsoids. Notably, a densely-packed domain of such hard nematic particles will experience many collisions as the particles evolve under Euler's equations of rigid body mechanics. In this talk, we present some surprising mathematical results on the collisions of such hard particles, and discuss some of the analytical challenges one faces when trying to construct solutions to Euler's equations of motion for these particles. (Received August 06, 2015)