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Plastic events in soft glasses

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Many materials around us respond elastically to small applied stresses, but flow once a threshold stress (the yield stress) is exceeded. This is the case for food products, powders, cosmetics, foams, etc... It turns out that understanding the yield stress transition in these materials, often called soft glasses, is a challenging question. Similar to structural glasses, soft glasses exhibit aging and complex dynamics. Also, the size of the elementary building block of a soft glass is usually ranging from 1 micron to 1mm, ruling out the possibility to investigate the problem by molecular dynamics.

Recently, a new approach has been proposed: using a mesoscopic formulation of the system, the dynamics of relative simple soft glasses, like foams or micro emulsions, has been investigated. Numerical simulations allow the computation of several important properties of the systems, such as the yield stress transition. In this talk, I will review the new approach and explain how the complexity of soft glass dynamics may be disentangled in a systematic way.

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