Time-dependent forced motion of a colloidal particle in linear response and beyond

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We develop a microscopic theory describing activated transport of driven colloids kicked by collisions with surrounding particles. Extending an existing framework for microrheology of colloids in constant force scenarios, we present the first steps for a theory of time dependent forces. In a first application we were able to derive and test a linear response relation for a particle that is released after being pulled through a dense suspension, which results in a backward *recoil* motion[1]. Furthermore, a simple schematic MCT model has been developed to extend the study to nonlinear viscoelastic behaviour.

The project is a collaboration between Konstanz and Göttingen.

References:

[1] J. Caspers, N. Ditz, K. Krishna Kumar, F. Ginot, C. Bechinger, M. Fuchs, M. Krüger, *How are mobility and friction related in viscoelastic fluids?,* J. Chem. Phys. **158**, 024901 (2023)