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Microrheology using a custom-made AFM[1] SEBASTIEN KOSGODAGAN ACHARIGE, UMR CNRS 5672 Laboratoire de Physique de lEcole Normale Superieure de Lyon, 46 Allee dItalie, 69364 Lyon cedex 07, France, MICHAEL BENZAQUEN[2], UMR CNRS 7083 Gulliver, ESPCI ParisTech, 10 Rue Vauquelin 75005 Paris, France, AUDREY STEINBERGER, UMR CNRS 5672 Laboratoire de Physique de lEcole Normale Superieure de Lyon, 46 Allee dItalie, 69364 Lyon cedex 07, France — In the past few years, a new method was developed to measure local properties of liquids (X. Xiong *et al.*, Phys. Rev. E 80, 2009). This method consists of gluing a micron-sized glass fiber at the tip of an AFM cantilever and probing the liquid with it. In ENS Lyon, this method was perfected (C. Devailly *et al.*, EPL, 106 5, 2014) with the help of an interferometer developped in the same laboratory (L. Bellon *et al.*, Opt. Commun. 207 49, 2002 and P. Paolino *et al.*, Rev. Sci. Instrum. 84, 2013), which background noise can reach $10^{-14}\ m/\sqrt{Hz}$. This method allows us to measure a wide range of viscosities (1 $mPa.s$ to 500 $mPa.s$) of transparent and opaque fluids using a small sample volume ($\sim$ 5 mL). In this presentation, I will briefly describe the interferometer developped in ENS Lyon, then explain precisely the microrheology measurements and then compare the experimental results to a model developped by M. Benzaquen.

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