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**A Microscopic Test of Fluidity in Soft Sphere Suspensions** MARCEL WORKAMP, SEPIDEH ALAIE, JOSHUA DIJKSMAN, Wageningen University — We experimentally study the possible microscopic ingredients of the fluidity field that determines the slow flow behavior in a suspension of soft spheres. The experimental system consists of hydrogel particles made using a simple macroscopic technique. We perform experiments using a custom designed Couette shear cell, with transparent bottom and lid. The measurement cell has a fixed volume and we investigate suspensions at a finite pressure, which we measure on a part of the lid. By imaging in transmission mode, we have access to local velocities and stresses through the photoelastic properties of the hydrogel. As we use a rheometer to drive the system, we also measure the driving stress. We have thus have access to the local quantities required to probe the ingredients of fluidity. We compare results of suspensions of two different types of hydrogel; one of these displays a flow instability in its global rheology. We investigate how the local rheology is influenced by the instability.

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