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Droplet breakup past an obstacle[1] SUZIE PROTIERE, DAVE WEITZ, SEAS - Harvard University, HOWARD STONE, Princeton University — To investigate the transport of drops in a porous medium, we consider a model at the scale of an elementary event consisting of drop passing an obstacle in a microfluidic channel. We can thus observe the breakup process in a controlled way. We demonstrate that there exists an unstable situation for which a drop manages to pass the obstacle without breaking and define a critical value of the capillary number Ca* for which a drop will break. We also show that the obstruction dimensions play an important role in the breakup-non breakup transition. Finally we propose a model which describes the observed transition between breakup and non-breakup.

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