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Dynamic trapping of sliding drops on wetting defects ANDREA CAVALLI, University of Twente, MICHIEL MUSTERD, TU Delft, DIETER 'T MANNETJE, DIRK VAN DEN ENDE, FRIEDER MUGELE, University of Twente — We present a numerical analysis of the dynamic interaction of a sessile sliding drop with a wetting defect. Our three-dimensional model, developed with OpenFOAM, allows us to describe inertial and viscous effects, as well as the internal degrees of freedom of the droplet. We observe that the ability of a drop to deform and stretch enhances the strength and range of the wetting defect, in comparison to a simplified analytic description. We further investigate the role of the strength, size and steepness of the defect in retaining the drop. Finally, we compare our simulations with trapping experiments on electrowetting obstacles, observing a quantitative agreement. This shows that the trapping of sliding drops follows a universal behavior, which is not significantly affected by the nature of the defect.

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