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Asymmetry of Drop Impacts on Patterned Hydrophobic Microstructures GEOFF WILLMOTT, The University of Auckland, SIMON ROBSON, The University of Melbourne, MATHEU BROOM, The University of Auckland — When a water drop falls on to a flat solid surface, asymmetries in the geometry of the spreading drop can be specifically determined by patterned surface microstructures. For hydrophobic (or superhydrophobic) micropillar arrays, the most important asymmetric mechanisms appear to be the surface energy of contact lines, and pathways for gas escaping from penetrated microstructure [1]. In this presentation, static wetting and drop impact experiments will be discussed in relation to drop asymmetries. In addition to micropillar arrays, natural superhydrophobic surfaces (leaves) have been studied [2], and may suggest possibilities for controlling drop impacts in applications. Some of the clearest large scale drop asymmetries on leaves, which are similar to those associated with low drop impact contact times on synthetic surfaces [3], appear to be caused by features which generate high contact angle hysteresis, and are therefore indicative of poor superhydrophocity. [1] S. Robson and G. R. Willmott, Soft Matter 12, 4853 (2016). [2] A. Fritsch, G. R. Willmott and M. Taylor, J. R. Soc. N. Z. 43, 198 (2013). [3] J. C. Bird, R. Dhiman, H. M. Kwon and K. K. Varanasi, Nature 503, 385 (2013).

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