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Grooves drain dew HENRI LHUISSIER, IUSTI, Aix-Marseille Univ. CNRS, France, PIERRE-BRICE BINTEIN, LAURENT ROYON, MSC, Univ. Paris-Diderot, France, ANNE MONGRUEL, DANIEL BEYSENS, ESPCI, Paris, France — The yield of natural dew harvesting is often limited by the amount of water remaining on the collector plate at sunrise. By cooling inclined and partially wetting plates in a controlled atmosphere, we show that this immobilized amount is significantly reduced when the plate is dug with vertical sub-millimeter-sized grooves. As condensation proceeds, the grooves rapidly fill up with water and hasten drop shedding by two mechanisms. First, they connect and provoke the coalescence of distant drops, which accelerates the emergence of large drops. Second, they reduce the drop pinning to the plate, which decreases the drop size at the onset of shedding. We will discuss how these mechanisms depend on the rate of condensation, the plate inclination and the grooves dimensions, as well as the consequences for dew harvesting.

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