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**The dynamics and breakup of water streams flowing down an inclined superhydrophobic surface**[1] JONATHAN ROTHSTEIN, ELIZABETH BAUMHOFF, University of Massachusetts - Amherst — In this talk, we present a series of experiments investigating the flow of water streams down a series of hydrophobic and superhydrophobic surfaces. To create the superhydrophobic surfaces, random texture was imparted onto a Teflon surface by sanding it with sand papers with a range of grit sizes. Our previous work has showed that there exists an optimal sand paper grit (240 grit) for eliminating contact angle hysteresis and reducing drag. The effect of advancing contact angle, contact angle hysteresis, plate inclination and flow rate on the shape of the meandering streams of water will be presented. We will show that the dynamics and breakup of water streams flowing down superhydrophobic surfaces is strongly dependent on contact angle hysteresis. We will show that decreasing the contact angle hysteresis makes the rivulets less stable resulting in an increased number of bends, more side-to-side motion of the stream and a reduction in the length of the stream at the moment it breaks up into drops. Additionally, decreasing hysteresis also results in a reduction in the radius of curvature of the bends observed along the meandering stream. Finally, we will show that at high flow rates, ejection of an intact liquid stream from the superhydrophobic surface can be observed.

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Jonathan Rothstein
University of Massachusetts - Amherst

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