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Impact of liquid droplets on a spinning disk LAURENT COURBIN, JAMES C. BIRD, ANDREW BELMONTE, HOWARD A. STONE, SEAS, Harvard University — We study the impact of a water droplet at the center of a spinning disk whose surface is covered by soot to create a superhydrophobic substrate. By varying the velocity of impact V and the rotation rate w, we observe a rich variety of dynamics including bouncing, spreading and dewetting. For low values of V and w, the drops bounce while for intermediate speeds the drops spread on the substrate, retract and then break-up into smaller droplets. For larger values of both V and w, the drops dewet via the nucleation of a dry spot at the center of the spreading liquid sheet. We provide an "impact" diagram that summarizes our experimental observations, and rationalize these results using simple physical arguments comparing the surface tension effects with rotation-driven spreading and thinning.

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