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**Spider capture thread: form and function** SUNGHWAN JUNG, Department of Mathematics, Massachusetts Institute of Technology, CHRISTOPHE CLANET, Laboratoire Hydrodynamique, Ecole Polytechnique, JOHN BUSH, Department of Mathematics, Massachusetts Institute of Technology — We present the results of a combined theoretical and experimental investigation of spider capture thread. While the radial threads in a spider web are simply cylindrical, the circumferential threads are pre-wound helices immersed in a viscous fluid. These so-called capture threads are subject to an instability reminiscent of Rayleigh-Plateau that results in the formation of a series of droplets along the thread, each filled with a series of coils. We demonstrate that this instability is a natural example of capillary origami that will arise when the surface tension exceeds the tension of the spring. Moreover, we demonstrate its efficacy in prey capture through augmenting damping during prey impact.

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