Abstract Submitted
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Instant capillary origami[1] MARCO RIVETTI, BASILE AUDOLY, SEBASTIEN NEUKIRCH, CHRISTOPHE JOSSERAND, ARNAUD ANTKOWIAK, Institut D'Alembert, Paris. CNRS & UPMC — A liquid drop impacting a thin elastic membrane forms a "dynamical capillary origami" on the very rapid capillary timescale. Dynamics is here a key ingredient that allows for shape selection of the elastocapillary bundle based only on the impact velocity. We study this phenomenon using a simplified 2D setup, where a drop impacts a narrow polymer strip. This experiment exhibits a surprisingly rich variety of phenomena: coupled capillary and elastic waves, drop breakup, jet ejection...We propose a very simple rod dynamics numerical model that mimics the complex fluid-structure interactions at play. The results of this model are in close agreement with the full experiment, both in the qualitative dynamics of folding and in the quantitative representation of the phase diagram of encapsulation. Eventually, we discuss how drop dynamics may induce anomalous encapsulation events where unexpectedly long strips are wrapped around drops.

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