Statistical properties of a folded elastic rod ELSA BAYART, Laboratoire de Physique Statistique de l'Ecole Normale Supérieure, CNRS UMR8550, 24 rue Lhomond, 75231 Paris Cedex 05, France, STÉPHANIE DEBOEUF, LAURENT BOUÉ, FRANCIS CORSON, AREZKI BOUDAOUD, MOKHTAR ADDA-BEDIA — A large variety of elastic structures naturally seem to be confined into environments too small to accommodate them; the geometry of folded structures span a wide range of length-scales. The elastic properties of these confined systems are further constrained by self-avoidance as well as by the dimensionality of both structures and container. To mimic crumpled paper, we devised an experimental setup to study the packing of a dimensional elastic object in 2D geometries: an elastic rod is folded at the center of a circular Hele-Shaw cell by a centripetal force. The initial configuration of the rod and the acceleration of the rotating disk allow to span different final folded configurations while the final rotation speed controls the packing intensity. Using image analysis we measure geometrical and mechanical properties of the folded configurations, focusing on length, curvature and energy distributions.

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