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Shapes of drying hydrogel cylinders ETIENNE REYSSAT, VINCENT ETIENNE, PMMH, ESPCI — Most materials change shape upon drying or wetting. Inhomogeneity of the drying and wetting processes lead to the development of internal stresses. As a result, a solid sample undergoes complex deformations or fracture. We present experimental work on the evolving shapes of drying hydrogel cylinders. We show that depending on the initial aspect ratio of the cylinder, a gel sample undergoes a variety of shape changes. We show qualitative analogies with the drying of wood and with instabilities of cylindrical shells or plane membranes.

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