

Abstract Submitted
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Wrinkling patterns of thin sheets glued to a negative curvature surface RASTKO SKNEPNEK, MARK BOWICK, XU MA, Syracuse University, ZHENWEI YAO, Northwestern University — Gauss's Theorema Egregium provides an intimate connection between the metric and the Gaussian curvature of a surface. If a thin sheet is adhered to a substrate with a negative Gaussian curvature it will experience stress due to the curvature-driven change of its metric. In the inextensible limit any changes of metric are not possible and the sheet will relieve the stress by locally deforming via wrinkles or folds. Using geometric arguments and numerical simulations of a non-linear elastic model we analyse the wrinkling pattern as a function of the shape of the adhering substrate.

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