

# Spiral crack path in thin sheets

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Thin layers are commonly used in the industry (from everyday packaging to airplanes) and frequently found in biological systems. The mechanics of thin sheets is rich and complex, with strong geometrical nonlinearities leading for example to the intricate folds and singularities that we can observe in a crumpled sheet of paper. But here we show that the fracture path in thin sheets can follow remarkably regular geometrical path.

We have studied experimentally two situations that evolved from an initial simple notch configuration into a logarithmic spiral crack path that grew from a few millimeters to a meter in diameter. The regularity of the crack path is particularly impressive despite of the scale span. These two different procedures lead to two families of logarithmic spirals, and the study of the final shape gives a measurement of material properties.