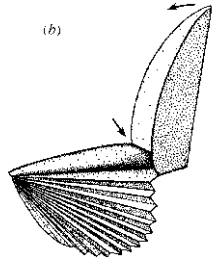
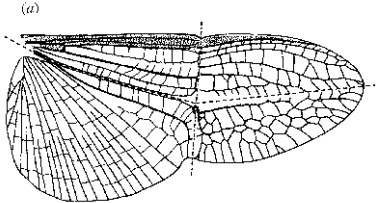


Local mechanics of a single fold

Théo Jules, Frédéric Lechenault, Mokhtar Adda-Bedia

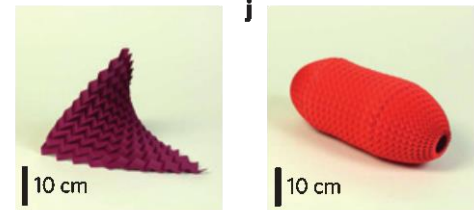
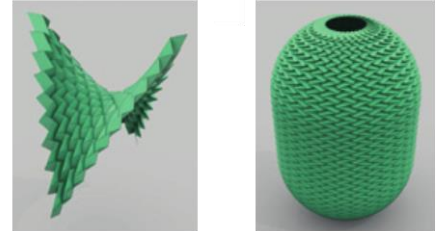
Why are the origamis so interesting ?

Nature



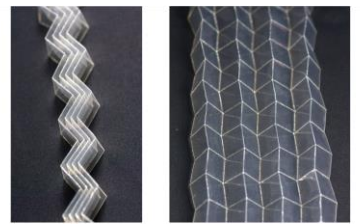
Insect wing, Haas et al.

3D objects



Programmable Origamis, Dudte et al.

Original properties



(a) Folded state (b) Deployed state



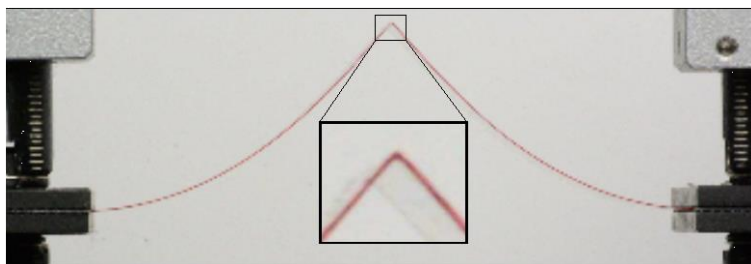
(c) Folded state (d) Deployed state

Bistable origami, Brunck et al.

Fundamental element: **Single Fold**

Local mechanics of a single fold

Experiment : Single fold under external load

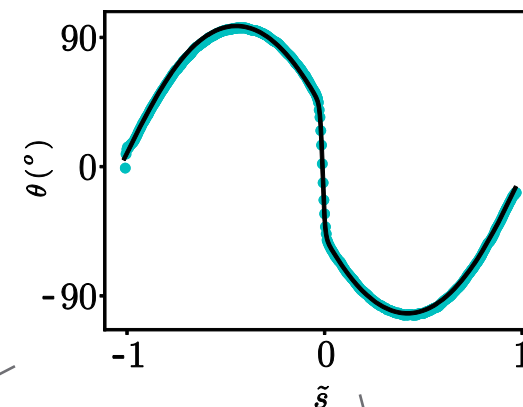


+ Continuous elastic model
Pre-strained Elastica

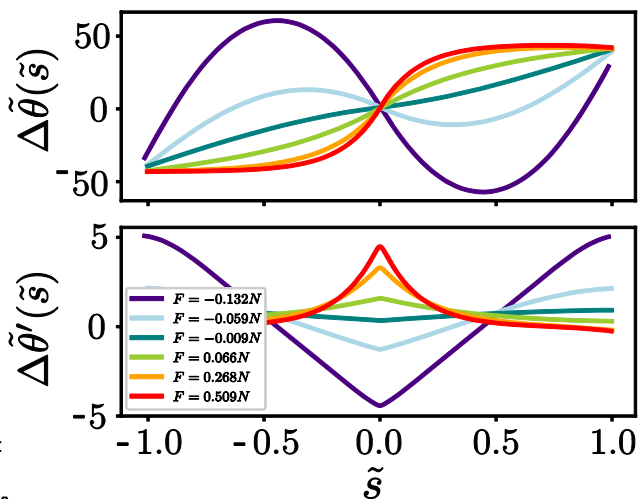


Fold shape

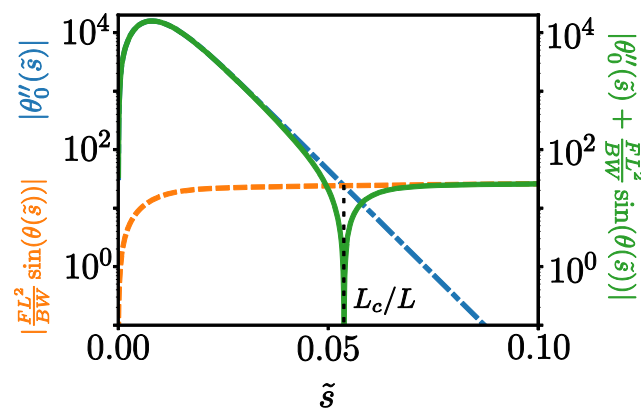
Experiment (blue) and prediction (black)



Local deformation and moment



Crease length L_c



Crease linear elastic response

