Po-Ru Loh: Curved Creases
- applicable surface = isometric to plane
- arbitrary creases - not well studied
- developable surface = applicable + smooth
- better studied
- new result: nontangential single-vertex neighborhood folds continuously
- 1DOF “mechanism” if regions stay flat

David Charlton: Locked orthogonal trees
- result: there is a locked orthogonal 2D tree
- model by nonorthogonal tree with tiny edges contracted
- rigid in self-touching state by Rules 1 & 2:
- handle zero-length edges by Lecture 22 contrapositive:
  self-touching disconnected \( \Rightarrow \) nontouching disconnected
- joint with various people
  in particular Ling
Hoda Bidkhami: Chain folding problems
- Whitesides et al.: can one chain config. be folded into another, allowing self-intersected, but inside a polygon confinement
- $l$-ruler [Pei & Whitesides]: all edges length $l$
- characterization of collapsibility of $l$-ruler

within regular $2k$-gon:
- always for $l \leq \omega$ - width
- not for $w \leq l \leq m$ - vertex-midpoint dist.
- always for $m < l \leq d$ - diameter
- characterization in equilateral $\Delta$:
  - always for $l < \chi_1 \&$

Amy Wibowo: Origami rabbit design
- Lang’s tree method
  & TreeMaker to optimize
  - added some disks during design
Edwin Chen: Origami & Kolmogorov complexity

- **Kolmogorov complexity** = length of shortest program outputting the string
- most strings of length \( n \) have Kolmogorov complexity \( n + o(n) \)
- Soloveichik & Winfree: unique tile assembly requires \( \Theta(K/\log K) \) tile types (up to additive constants)
- new result: for sufficiently large \( n > m \), \((m > \log \ldots)\) most \(nxm\) maps cannot be folded flat by simple folds
  - proof: this would compress

Zach Abel: Hinged dissections exist

- Wallace-Bolya-Gerwein Theorem:
  every two polygons of equal area have a common dissection
- new results:
  1. ditto for hinged dissections
  2. using pseudopolynomial \# pieces (optimal)
  3. continuously folding without overlap
  4. dissections of 3D polyhedra can be turned into edge-hinged dissection
- many ideas
- **OPEN**: higher dimensions (hinging part easy) \# pieces, motions in 3D?
Duks Koschitz: Curved crease explorations

- concentric circles & ellipses
- variations thereof, e.g. offsets
- quadratic curves, mainly closed loops
- only geometric failure: 3 parabolas in a cycle
- materials: cotton paper, tin metal (difficult), polycarbonate

SCULPTURE
laser cutter
waterjet cutter