Miura-Ori Folding: Art and Engineering

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Abstract

From "automobiles" to "zipper tubes", origami has you covered and has recently been one of the hottest topics of research in art, mathematics, chemistry, engineering, material science, medicine, and many other fields.

Come see some interesting examples and models that you can take back to your classroom, and create your own metamaterial that you can take home and experiment with. The presenter will share handouts and books that you can use in your classroom.

Biographical

David is motivated by finding fun and unconventional ways to illustrate concepts in mathematics.

He enjoys helping people re-examine their expectations of what mathematics is and is not.

David is in the last year of his term as division chair at Delta College and is excited to be soon taking a more active role in the classroom.

Areas of Investigation

self-assembling devices
zipper tubes
origami robotics
magic balls

Initial Innovators

Robert Lang
Tomohiro Tachi
Eric Demaine
Paul Jackson

Miura-ori Folding

- Acordian folds (pleats)
- Cross folds (alternating)
- Reverse folds
  - Pleats become alternating
  - Alternating become pleats

Material Qualities

Tension and compressibility
Sounds like ... a spring!
Compact, extendable

References

Robot Surgeons And Artificial Life (BBC)
Tiny Machines Win Chemistry Nobel Prize (BBC)