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L23.3
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Hank Hoffmann: 3D linkage unfolding via energy method

- implementation to experiment with 3D linkage unfolding open problems (PovRay, animated GIF)
- initially, energy function based on vertex↔bar distance (like in 2D)
  - unfolds knitting needles — oops!
- bar↔bar distance needed ~ 9 cases

Paul Stellman & Satoshi Takahashi:

[Energy unfolding of single-vertex origami & application to nano-origami]

- in nanomanufacturing, want to (automatically) fold panels on top of each other
  - photonic crystal fabrication
  - unique ID tags readable from dist.

- manufacture in 2D (limitation in physical process)
- must be foldable via kinematics & ideally dynamics
- here, single-vertex origami
  - unfoldable via expansive motion [Streinu & Whiteley 2001] by slicing with sphere & treating as spherical linkage
  - what about energy method?
- implementation (Matlab with Sequential Quad. Programming & OpenGL)
  - use energy function $\frac{1}{\Sigma d^4}$ instead of $\Sigma \frac{1}{d^4}$
    ↳ not separable or charge...
    not working for some reason
- future: - different algorithms & parameterizations
  - energy modeling dynamics
  ... for folding?