

Abstract Submitted
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Q: How many folded angels can we fit on the head of pin? A:
22+/-5 ITAI COHEN, Cornell University, TOM HULL, Western New England University, ROBERT LANG, Lang Origami, CHRISTIAN SANTANGELO, University of Massachusetts, Amherst, MARC MISKIN, KYLE DORSEY, PAUL MCEUEN, Cornell University — For centuries, origami, the Japanese art of paper folding, has been a powerful technique for transforming two dimensional sheets into beautiful three dimensional sculptures. Recently, origami has made its foray into a new realm, that of physics, where it has been revolutionizing our concept of materials design. Arguably the greatest strength of this new paradigm is the fact that origami is intrinsically scalable. Thus sculptures built at one size can be shrunk down smaller and smaller. This begs the question: what is the smallest fold one can make? Or in other words how many folded angels can we fit on the head of a pin? This talk takes a deep dive into how origami has been marching smaller and smaller in size. From folding by hand, to self-folding through shape memory alloys and even folding via polymer layers, I will argue that the ultimate limit for scaling down origami is set by folding a sheet of atomic dimensions. I will conclude by showing this vision realized in the folds of a single sheet of graphene.

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