

Abstract Submitted
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Combinatorial

3D Mechanical Metamaterials CORENTIN COULAIS, Univ of Leiden, EIAL TEOMY, Tel-Aviv University, KOEN DE REUS, Univ of Leiden, YAIR SHOKEF, Tel-Aviv University, MARTIN VAN HECKE, Univ of Leiden / AMOLF — We present a class of elastic structures which exhibit 3D-folding motion. Our structures consist of cubic lattices of anisotropic unit cells that can be tiled in a complex combinatorial fashion. We design and 3d-print this complex ordered mechanism, in which we combine elastic hinges and defects to tailor the mechanics of the material. Finally, we use this large design space to encode smart functionalities such as surface patterning and multistability.

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