Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Combinatorial Mechanical Metamaterials MARTIN VAN HECKE, Amolf Amsterdam Leiden University — The structure of most mechanical metamaterials is periodic so that their design space is that of the unit cell. Here we introduce a combinatorial strategy to create a vast number of distinct mechanical metamaterials, each with a unique spatial texture and response. These are aperiodic stackings of anisotropic building blocks, and their functionality rests on both the block design and their stacking configuration which is governed by a tiling problem. We realize such metamaterials by 3D printing, and show that they act as soft machines, capable of pattern recognition and pattern analysis.

Martin van Hecke
Amolf Amsterdam
Leiden University

Date submitted: 30 Oct 2015 Electronic form version 1.4