

## **Joshua Dijskman**

### Tunable Power-Law Aging in 3D Auxetic Granular Metamaterials

Aging in disordered materials is typically slow and hard to control. We introduce a 3D auxetic granular metamaterial that ages quickly and predictably under cyclic compression. By blending auxetic and conventional grains, we can tune the aging rate, compressibility, and energy dissipation of the packing. Packings rich in auxetic grains age rapidly and absorb up to five times more energy than ordinary packings. This simple mixing strategy offers a new way to design granular materials with tailored aging and dissipation, opening possibilities for impact protection and adaptive materials.