

Supplemental Information for the paper: Discontinuous Buckling of Wide Beams and Metabeams, II

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In the following document we provide details for the 5 Movies accompanying the paper *Discontinuous Buckling of Wide Beams and Metabeams*.

EXPERIMENT: METABEAM

In Figs. 4ab, we show the force curves and snapshots for buckling experiments on several metabeams. The movie (*Experiment_metabeam.mp4*) shows the buckling experiment with pictures (left) and the force curve (right) for a beam with $e = 0.3$ and $\ell = 0.3$. We clearly see that the microscopic structure changes upon buckling.

SIMULATIONS: METABEAM

The movies *Simulation_metabeam1.avi* and *Simulation_metabeam2.avi* show plane strain simulations of two metabeams of aspect ratio 5.4%, $e = 0.1$ and $\ell = 0.05$ and 0.70 respectively. The movies *Simulation_metabeam1_zoom.avi* and *Simulation_metabeam2_zoom.avi* show the same simulation, but zoom on the middle of the beam. For the beam with $\ell = 0.7$, the microstructure hardly changes upon buckling. However, for $\ell = 0.05$, the shape of the holes changes significantly in the transverse direction: in the compressed part (left), the elastic filaments are bent, while in the extended part (right), they are stretched.