Buckling of an elastic wire inside an elastic matrix TIANXIANG
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Harvard University, PEDRO REIS, MIT — Using both experiment and dynamic
simulation results, we will discuss in this talk how a compressed elastic wire embed-
ded within an elastic matrix buckles into two dimensional (2D) planar shape and
then three dimensional (3D) helical shape. We will show that the transitions from
the initial 1D to 2D and then 3D configurations can be tuned by and are highly sen-
sitively to the supporting matrix stiffness. This property may be useful for future
photonic and piezoelectric devices. Analytic buckling and post-buckling analysis
will also be presented to rationalize our results.

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