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Mechanics and Dynamics of Snapping Beams ANUPAM PANDEY, Virginia Tech, DEREK MOULTON, DOMINIC VELLA, Oxford University, DOUGLAS HOLMES, Virginia Tech — Snap-buckling is an elastic instability that causes a rapid transition between two states separated by a finite distance. These rapid instabilities occur naturally in plants like the Bunchberry dogwood and the Venus flytrap, yet the dynamics of this phenomenon remain poorly understood. In this talk we discuss the statics and dynamics of the point load snap through of an arch. During deformation, the arch transitions from a symmetric to an asymmetric mode at a critical load and then snap-buckles at a critical indentation height. We will demonstrate that this critical force and displacement for stability loss varies nonlinearly with the amount of initial compression applied to the flat beam, and the dynamics of the snapping arch have an instability growth-rate dictated by the speed of sound within the material.

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