

Snap-through and vibrations of a deep arch

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PARAMETRIC STUDIES OF THE DYNAMIC EVOLUTION THROUGH A FOLD

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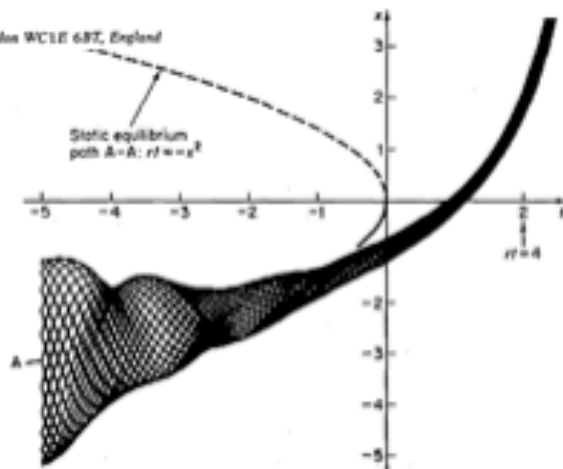
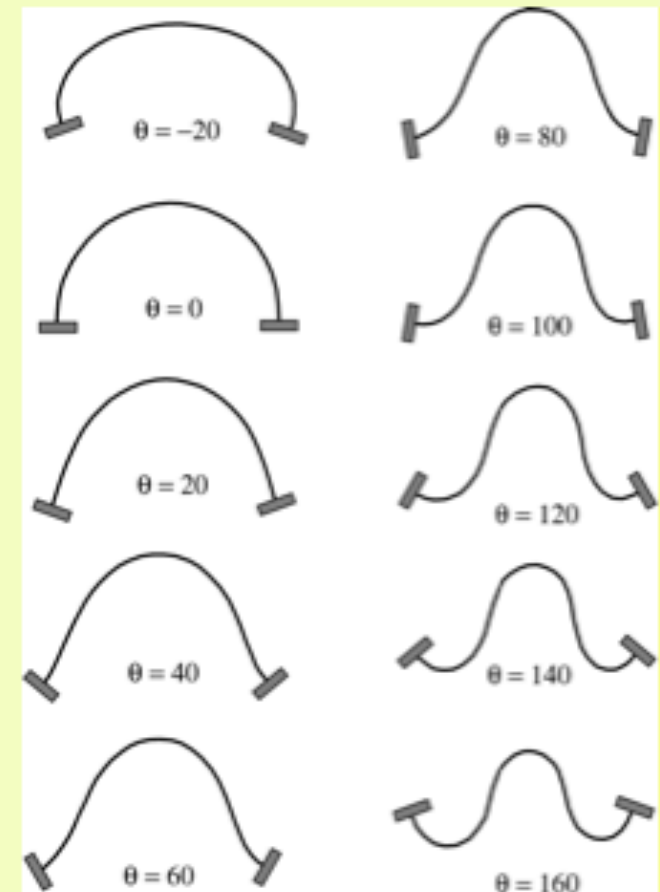
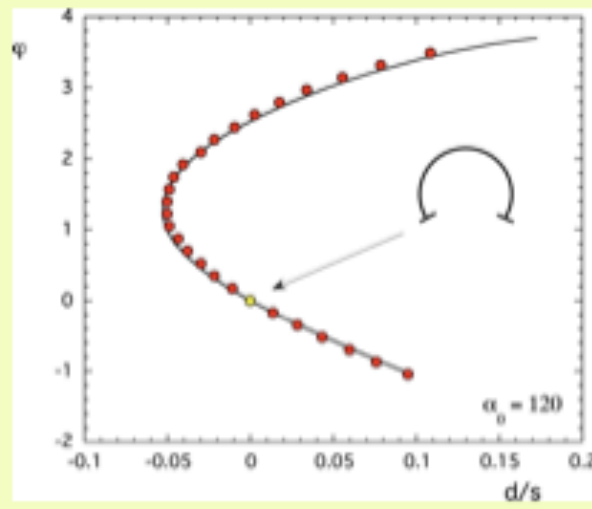
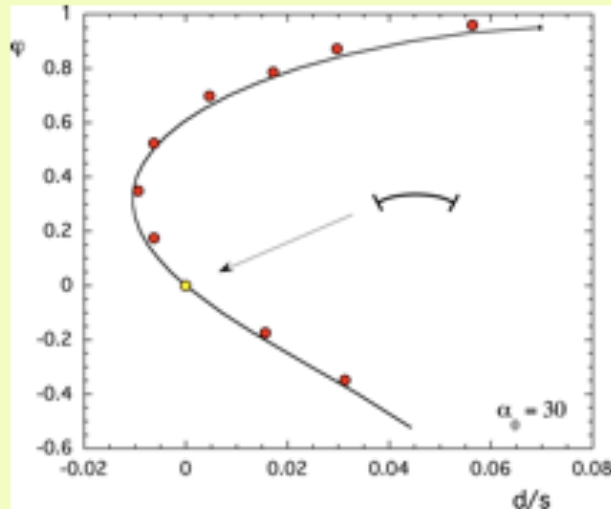


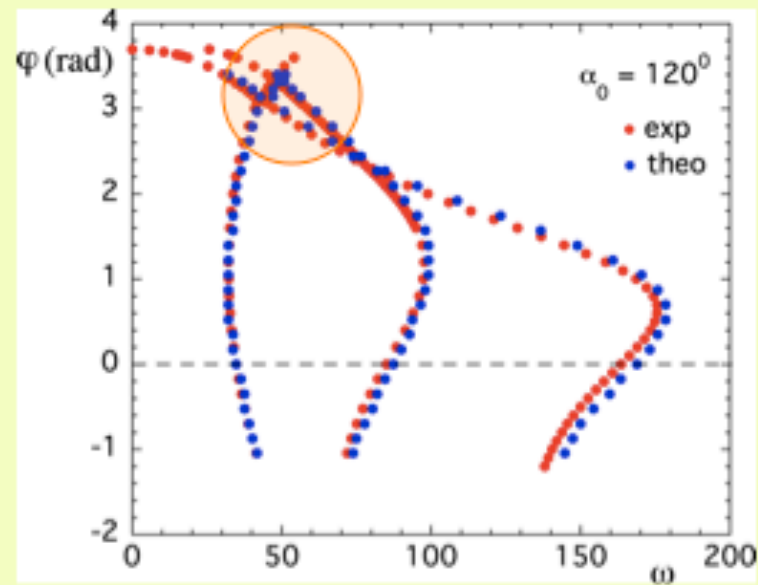
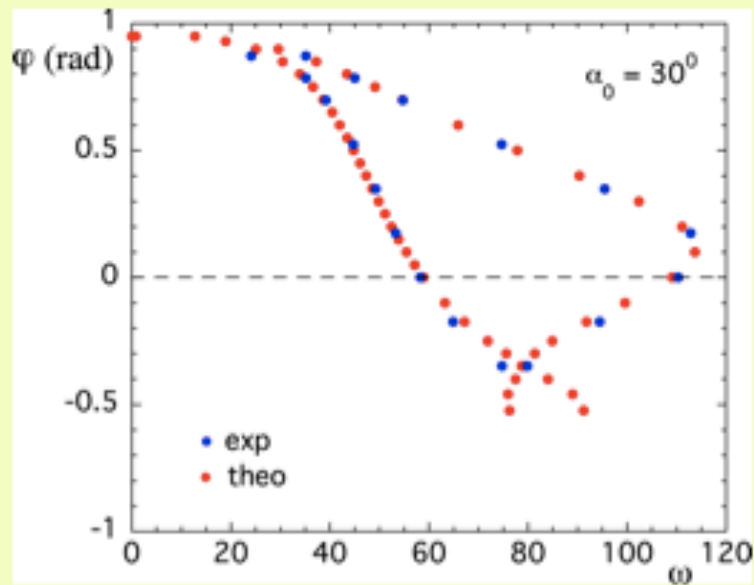
Figure 1. Typical dynamic approach to a fold for an evolving system. Evolving fold: $\ddot{x} + \dot{x} - x^2 - r = 0$, $r = 2$. Trajectories start at $t = -5$ on circle of radius 2, centre $(-\sqrt{10}, 0)$ in space of $(x, \dot{x}/40^{1/4})$ at 15° intervals.

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Snap-through is characterized by the lowest natural frequency dropping to zero



- The theory is based on solving the BVP for the elastica

- Eigenvalue veering and crossing occur as a function of end rotation

