

## Modelling of Nonlinear Dynamic Linked Elastic Structures

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In recent years, the tools required to study elastic systems have been sufficiently developed to allow researchers to focus on linked elastic structures. For example, linear models of plate-beam configurations which involve geometric junction conditions are known to be wellposed and controllable. Extensions to nonlinear plate-beam systems are motivated by issues arising from large-amplitude periodic oscillations, but such systems have not been seen in the literature. A model comprised of a nonlinear von Kármán plate coupled with a nonlinear beam equation is developed. Dynamic junction conditions are imposed at the interface. Well-posedness is established by first considering a corresponding linear problem, then applying a perturbation theorem for nonlinear semigroups. Proof of regularity takes advantage of elliptic theory, as well as the regularity of the Airy's stress function.