

Bifurcation of periodic solutions in a nonlinear model of a suspension bridge with variable cable stiffness

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We show our recent bifurcation results concerning a one-dimensional model of a suspension bridge with spatially non-constant stiffness parameter. This approach allows us to interpret the fact that the restoring force of the bridge's cables is concentrated near the cable stays, whereas being possibly significantly weaker in between. When compared to a similar model with constant stiffness, our approach brings an improvement e.g. in the uniqueness behaviour. We work in weighted Lebesgue spaces and use standard tools, such as Banach contraction theorem and Rabinowitz global bifurcation theorem.