

Railway vehicle dynamics, bifurcations and transitions

Hans True

Abstract: The Railway Vehicle Dynamical problems are multibody problems with from 7 to 80+ degrees of freedom. The mathematical models are nonlinear and non-smooth with tabulated constraints. Only autonomous problems are considered. The dynamics depend on the speed V as a control parameter and the vehicles can run steady, oscillate symmetric or asymmetric periodically, multi periodically, quasiperiodically or chaotic, possibly with multiple attractors. Several kinds of bifurcations exist. The theoretical dynamical models are investigated numerically and problems connected herewith will be briefly presented. Some interesting modes and bifurcations will be shown.

¹⁾ Hans True, Professor: DTU Compute, Richard Petersens Plads 324, DK-2800 Kgs. Lyngby, Denmark (DK), htru@dtu.dk.