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Stability and vibrations of an all-terrain vehicle subjected to nonlinear structural deformation and resistance. (English) Zbl 1111.34037

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The authors study the behavior of all-terrain vehicles (ATVs) travelling on rough terrain. They use a nonlinear analytical model to quantify the vehicle response.

Following a stability analysis, regions of stability/instability are obtained. Both analytical and numerical solutions of the governing equations are given.

The authors claim that their procedures form a foundation for accurately studying the stability and nonlinear response of ATVs moving on complex terrain.

The paper is well-written. It should be accessible to both theoreticians and practitioners concerned with nonlinear vehicle vibrations.

Reviewer: [Ronald L. Huston \(Cincinnati\)](#)

MSC:

- [34C60](#) Qualitative investigation and simulation of ordinary differential equation models Cited in 1 Document
- [34D23](#) Global stability of solutions to ordinary differential equations
- [70K20](#) Stability for nonlinear problems in mechanics
- [70E50](#) Stability problems in rigid body dynamics

Keywords:

[vehicle dynamics](#); [ATV](#); [numerical simulation](#); [vehicle dynamic stability](#); [nonlinear vibration](#); [vehicle modelling](#); [Mathieu equation](#)

Full Text: [DOI](#)

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