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Insight into Magnetorheological Shock Absorbers

- Presents the magnetorheological fluid theory and its applications in automotive magnetorheological dampers
- Highlights common configurations of flow-mode magnetorheological shock absorbers, which are considered to be particularly interesting by the automotive industry for controlled chassis applications
- Offers a math-based analytical model of an exemplary MR fluid device, a flow-mode monotube damper, which is needed

This book deals with magnetorheological fluid theory, modeling and applications of automotive magnetorheological dampers. On the theoretical side a review of MR fluid compositions and key factors affecting the characteristics of these fluids is followed by a description of existing applications in the area of vibration isolation and flow-mode shock absorbers in particular. As a majority of existing magnetorheological devices operates in a so-called flow mode a critical review is carried out in that regard. Specifically, the authors highlight common configurations of flow-mode magnetorheological shock absorbers, or so-called MR dampers that have been considered by the automotive industry for controlled chassis applications. The authors focus on single-tube dampers utilizing a piston assembly with one coil or multiple coils and at least one annular flow channel in the piston.

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