



Impact Factor: 0.573

Source: 2012 Journal Citation Reports®  
(Thomson Reuters, 2013)

Proceedings of the Institution of Mechanical Engineers, Part F:  
**Journal of Rail and Rapid Transit**

pif.sagepub.com

doi: 10.1243/PIME\_PROC\_1995\_209\_254\_02

Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and  
Rapid Transit **January 1995** vol. 209 no. 1 **49-59**

## Analysis of Modified Railway Passenger Truck Designs to Improve Lateral Stability/Curving Behaviour Compatibility

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### Abstract

Modified railway passenger truck designs are considered to improve the compatibility between dynamic stability and the ability of the vehicle to steer around curves. A comparative study on the non-linear steady state curving behaviour of some unconventional truck designs is carried out. The study reveals that modified truck designs with primary yaw dampers improve the performance. A particular design of railway truck in which the rear axle is an independently rotating wheelset and in which the primary suspension in the leading axle is different from the trailing axle—known as the unsymmetric wheelset and suspension truck—has the potential to achieve overall superior performance compared to other truck models considered in this paper, for design speeds of around 80 m/s. For the lower design speed of around 60 m/s, a conventional truck provided with primary yaw damper achieves adequate performance and is recommended for its simpler design features.

[railway trucks](#) [suspension design](#) [independently rotating wheelset](#) [yaw damper](#)

Received August 23, 1994.

Accepted April 11, 1995.