

## Article Abstract

Title:	Parametric analysis of rail vehicle parameters influencing ride behavior
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Journal:	<i>International Journal of Engineering, Science and Technology</i> , Vol. 3, No. 8, 2011, pp. 54-65.
Abstract:	This paper presents the influence of rail vehicle parameters on vertical and lateral ride behavior. The analysis considers coupled vertical-lateral 37 degrees of freedom mathematical model of an Indian Railway General Sleeper ICF coach formulated using Lagrangian dynamics. Both vertical and lateral irregularities of the railway track, considered as random function of time are incorporated in analysis. The ride analysis of the mathematical model suggests that discomfort frequency range lies from 4 to 10.5 Hz and improvements in the design of rail vehicle coach are required for better ride comfort. It is seen from parametric analysis that car body mass, secondary suspension vertical damping, primary suspension vertical damping and wheel base are the most sensitive parameters influencing vertical ride. While lateral ride is significantly influenced by car body mass, roll & yaw mass moment of inertia and secondary suspension lateral stiffness.
Keywords:	Parametric analysis; Vertical ride; Lateral ride; Ride comfort, Power spectral density