

Mechanik-Seminar

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Datum: Donnerstag, 16. Mai 2013
Uhrzeit: 15:45-17:15 Uhr
Ort: 10.23 SR | R 104

Vortragstitel: A novel method for producing low cost measuring wheels

Abstract:

All forces that act on a vehicle, except the gravitational and aerodynamic ones, act on the tyre footprint areas. Consequently, in order to fully understand its dynamic behaviour, experimental data of the contact forces and moments are needed. These data may be obtained by the so-called "measuring wheels". A novel method for producing a low cost measuring wheel is presented here. It is based on the instrumentation of the metallic part of a commercial wheel with strain gauges. The points where the sensors are mounted must be grouped in at least three concentric circumferences. Inside each circumference, the strain gauges are placed at equidistant angular positions. The strain signals are combined in such a way that at least two new signals, which only depend on the tyre forces and moments, are obtained per circumference. The technique used to compute them is based on the elimination of the continuous component and the largest possible number of harmonics, except the first one, of the Fourier series expansion of the strain signals. Finally, the contact forces and moments are obtained from these new signals by solving two systems of linear equations with three unknowns.

Alle Interessenten sind herzlich eingeladen.

Prof. Dr.-Ing. Peter Betsch