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Mechanik-Seminar

Referent: **Arend L. Schwab, Ph.D.**
Laboratory for Engineering Mechanics, Delft University of Technology

Datum: Donnerstag, 15.01.2009
Uhrzeit: 15:45 Uhr
Ort: Hertz Hörsaal, Geb. 10.11, Raum 126

Thema: **"Some Observations on Human Control of a Bicycle"**

Abstract: Riding a bicycle is an acquired skill. At rest the system is highly unstable yet, given enough forward speed, it is easy to stabilize. Over the past 140 years scores of people have been attracted to these phenomena, either for a dissertation, a hobby or sometimes as part of a life's work on vehicles. Unfortunately, few results agree and there is little generality on the basic features that make a bicycle stable. The only two known basic features are: a controlling rider can balance a forward-moving bicycle by turning the front wheel in the direction of an undesired lean, and that some uncontrolled bicycles can balance themselves given some initial speed.

In this presentation I will focus on the identification of human control actions in normal cycling. The task under study is the stabilization of the mostly unstable lateral motion of the bicycle-rider system. This is done by visual observation of the rider and measuring the vehicle motions. The observations show that no significant upper-body lean occurs and that most of the stabilizing control actions are done by steering control only. However, at very low forward speed a second control is added to the system: knee movement. Moreover, all control actions are performed at the pedaling frequency, whilst the amplitude of the steering motion increases rapidly with decreasing forward speed.

Alle Interessenten sind herzlich eingeladen.

Prof. Dr.-Ing. Wolfgang Seemann