

Registration for the Spring-Meeting of the
German Physical Society
from 04.03. to 09.03.2005
in berlinakf

Information Propagation in an Ad-hoc Car2Car Network —

•ARNE KESTING, MARTIN SCHÖNHOF, MARTIN TREIBER, and DIRK HELBING — Institute for Transport & Economics, Dresden University of Technology

Traditional sensors of Adaptive-Cruise Control Systems only detect the immediate vehicle environment. To extend these limitations information transport on freeways based on car-to-car communication is a possible scenario for a next generation of Driver-Assistance Systems.

Therefore, we consider an ad-hoc radio network formed by equipped vehicles with a limited range for broadcasting messages to each other. By using equipped cars as relays messages about the actual traffic situation are transported further upstream in a self-organized manner without a central traffic management station on a short timescale.

For small percentages of equipped cars the message hopping within one driving direction is obviously rather limited. We propose to use the vehicles in the other driving direction as relays, too. Analytic results based on a Poisson approximation show the efficiency and velocity of information propagation by means of transverse message hopping. The probability distributions are compared to numerical results of microscopic traffic simulations.

Location: berlinakf
Date: 04.03.—09.03.2005
Section: Physics of socio-economic Systems
Subject: Traffic dynamics, urban and regional systems
Presentation: Talk
Email: kesting@vwitme011.vkw.tu-dresden.de
Membership: with DPG registered society: DPG