“Modelling and Control of Vehicle Strings”

Hoping to increase traffic throughput on congested roads researchers have been studying vehicle strings since the 1960s. The idea seems intuitive and simple: Instead of allowing individual drivers to navigate their vehicle freely on roads and highways each car is equipped with sensors and a local controller enabling it to automatically follow its predecessor. While it is well understood how to create a stabilising controller for each vehicle the system might not be “scalable”. This means that a small disturbance at the beginning of the vehicle string might amplify while propagating through the string and is often referred to as “string instability”. The talk addresses how vehicle strings can be modelled and how string stability can be guaranteed choosing a suitable controller for some classes of vehicle strings.