SOE 26: Mobility

Time: Friday 11:45–12:15 Location: MA 001

SOE 26.1 Fri 11:45 MA 001

The phase space of shared pooled mobility — •Nora Molkenthin — Potsdam Institute for Climate Impact Research, Potsdam, Germany

In face of the climate emergency and growing challenges ranging from pollution to traffic jams, shared pooled mobility has been floated as a potential solution for less congested, low-carbon and more space-efficient urban transport. However, it is unclear under which conditions shared pooled mobility offers a beneficial alternative. Here we map out the phase space and identify line service, shared pooled mobility and taxi service as distinct regimes depending on street network topology, fleet size and request load. We then model the adoption behaviour based on economic incentives in order to predict good parameter ranges for a shared pooled mobility service.

SOE 26.2 Fri 12:00 MA 001

Influence of Complex Networks on Ride-Pooling Systems — •Alexander Schmaus — Potsdam Institute for Climate Impact Research

Ride-pooling is an efficient technique to lower negative aspects of individual traffic by cars. Ride-pooling services bundle similar rides together, implying that the number of required vehicles and the overall number of rides decreases. Since studies show that using stops is more efficient than having a door-to-door service, we work with discrete stop networks. In particular, we study, which stop networks perform the best at minimizing the average passenger travel time. To draw the most efficient networks from the infinite set of possible networks that can be created on every road network, a Markov Chain Monte Carlo algorithm (MCMC) is used. Starting from an initial network, in each step of the MCMC, a proposal network is generated from the last accepted network by pooling or splitting stops. By running a ride-pooling simulation on the created network and measuring the resulting travel time, the efficiency is determined. Here, a low travel time indicates a high efficiency. The proposed network is accepted under two conditions: It could surpass the efficiency of the last accepted network, or, to avoid a local minimum, it could be accepted with a low probability even if its less efficient than the last accepted network. From the result networks it can be derived that stops at intersections are preferred. Stops that lead to detours are ignored and the area served by the system is reduced.