Shockwave Suppression by Vehicle-to-Vehicle Communication

The rapid development of wireless communication and information technologies has increased research interests in inter-vehicle communication systems and their effect on traffic flow. One of the most complex traffic phenomena on freeways are shockwaves. Shockwaves are recognized as the sudden, substantial change in the state of the traffic flow, which acts as an active or moving bottleneck. They have significant impact on freeway capacity and safety. For this study, a microscopic traffic simulation was used to determine the extent to which inter-vehicle communication and change in the driving strategy after the recognition of a shockwave can influence the propagation and dissolving of shockwaves on freeways. We also briefly introduce the shockwave theory and our communication algorithm. Then we present the simulation result with different penetration rates of communicative vehicles, which are randomly dispersed in traffic flow, through performance measures for traffic flow with shockwaves.