
REINHARD ILLNER, University of Victoria, Department of Mathematics and Statistics, PO Box 3060 STN CSC, Victoria, BC W8W 3R4

On Stop-and-Go Waves in Dense Traffic

Starting from a Vlasov-type kinetic model we derive nonlocal macroscopic models generalizing the models of conservation type first introduced by Aw–Rasle and Zhang. We discuss reasonable examples of braking and acceleration forces as functions of density and relative speed. Removing the nonlocality by Taylor expansions produces nonlinear PDEs for both braking and acceleration scenarios. A traveling wave ansatz produces stop-and-go waves in good qualitative agreement with practical observations.