Boundary Conditions
for Non-linear Regularized 13-Moment-Equations

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Boundary conditions are the major obstacle in simulations based on advanced continuum models of rarefied and micro-flows. This talk presents a theory how to combine the non-linear regularized 13-moment-equations derived from Boltzmann's equation with boundary conditions obtained from Maxwell's accommodation model. Our hypothesis is that the equations have to be adapted to the boundary conditions in a way that the number of boundary conditions required does not depend on the process. To achieve this continuity condition, the equations need to be properly transformed while keeping their asymptotic accuracy with respect to Boltzmann's equation.

After finding a suitable set of boundary conditions and equations, a numerical method for generic shear flow problems is formulated.
Several test simulations demonstrate the stable and oscillation-free performance of the new approach.