

On some regularized nonlinear hyperbolic equations

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Abstract

It is known that even with smooth initial data, the solutions of nonlinear hyperbolic PDEs develop discontinuous shocks in finite time. In order to avoid these shocks, we regularize the equations by adding “small” terms. In this talk, we derive and study some suitable regularizations of the Burgers equation and the barotropic Euler equations. We show the existence of global solutions. Moreover, in the scalar case, we show that as the regularization parameter goes to zero, the solution of the regularized Burgers equation converge to the entropy solution of the classical Burgers equation.