Boltzmann equation and conservation laws in gas dynamics

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There has been important progresses in recent years in the theory of shock waves for coservation laws. We will discuss the recent efforts on the Navier-Stokes equations in gas dynamics and Boltzmann equation in kinetic theory. The relationship between these equations has been much studied in two directions: One is for the incompressible limits and the other is for compressible shockless flows. We will view the Boltzmann equation via the compressible Euler and Navier-Stokes equations. This viewpoint yields new setup and analytical possibilities, which we will illustrate with the stability problem for shock and diffusion waves for the Boltzmann equation.