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Weak vs. strong solutions in the mathematical theory of compressible fluid flows

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Inhaltsangabe
We review some recent results and techniques that emerged in the context of models of compressible fluid flows, notably the Euler and Navier-Stokes systems. On one hand, we show that the classical solutions are stable with respect to a fairly large class of the so-called measure valued solutions. On the other hand, the (inviscid) Euler system may admit infinitely many weak solutions meeting all standard admissibility criteria. Besides these results, we discuss the problem of “universal” admissibility criterion that would identify the physically relevant and possibly unique solutions for given data.