

Hyperbolic Conservation Laws in Continuum Physics

This is a masterly exposition and an encyclopedic presentation of the theory of hyperbolic conservation laws. It illustrates the essential role of continuum thermodynamics in providing motivation and direction for the development of the mathematical theory while also serving as the principal source of applications. The reader is expected to have a certain mathematical sophistication and to be familiar with the rudiments of analysis and the qualitative theory of partial differential equations, whereas prior exposure to continuum mechanics is not required.

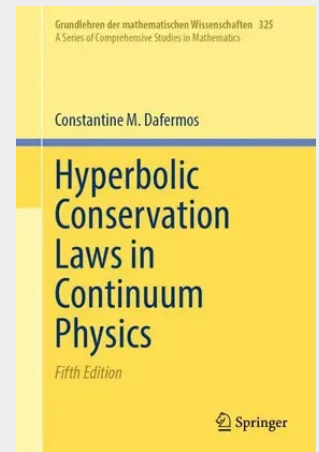
As with its earlier editions, the book is addressed to a diverse group of readers: younger researchers, newcomers to the area, looking for a broad overview of the field; specialists in the analysis of hyperbolic conservation laws aspiring to fathom its genetic relation to mathematical physics; experts in continuum mechanics, as a vehicle for acquiring the necessary analytical tools; and numerical analysts as a reference source to the general theory. This new edition contains an account of recent results on the Euler equations, pertaining to the breakdown of classical solutions and the construction of very weak, measure-valued, solutions as well as of milder, continuous but wildly oscillating turbulent solutions. Furthermore, the presentation of a number of topics in the previous editions has been revised, expanded and brought up to date. The bibliography has also been expanded, now comprising twenty-five hundred titles.

From the reviews of earlier editions:

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