# <<双曲问题（第2卷）>>

## 图书基本信息

书名：<<双曲问题（第2卷）>>

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## 内容概要

This two-volume book is devoted to mathematical theory， numerics and applications of hyperbolic problems.Hyperbolic problems have not only a long history but alsoextremely rich physical background.The development ishighly stimulated by their applications to Physics， Biology， and Engineering Sciences;in particular， by the design ofeffective numerical algorithms.Due to recent rapiddevelopment of computers， more and more scientists usehyperbolic partial differential equations and relatedevolutionary equations as basic tools when proposing newmathematical models of various phenomena and relatednumerical algorithms.

This book contains 80 original research and review paperswhich are written by leading researchers and promisingyoung scientists， which cover a diverse range of multidisciplinary topics addressing theoretical， modeling andcomputational issues arising under the umbrella of"Hyperbolic Partial Differential Equations".It is aimed atmathematicians， researchers in applied sciences and graduatestudents.

## 书籍目录

Anastasia Korshun,ova,Olga Rozanova
On Effects of Stochastic Regularization for the Pressureless
Gas Dynamics
Dietmar Kroener
Jump Conditions across Phase Boundaries for the Navier-Stokes
Korteweg system
Kai Krycki,Martitn,Frank
Numerical Treatment of a Non-classical Transport Equation
Modelling Radiative Transfer in Atmospheric Clouds
……
Volume 1

## 章节摘录

版权页： 插图： The resolution of the rarefaction wave is more troublesome, because the rarefaction advances into a constant state, where the mesh is very coarse: the mesh should be refined fast enough to resolve the corner of the rarefaction correctly. Again, the AdLim strategy performs very poorly, and the CT scheme produces a step in the middle of the rarefaction. Again, ENO and S&E （not shown） are very similar to MM. On the other hand, the rarefaction wave is well resolved by the uniform grid （see also the very low values of the entropy production, which is plotted on the lower part of the figure）. Obviously, the cost of the solution with the uniform grid is much higher, since it is using a much larger number of grid points. （Note that for Sref=0.001, the rarefaction wave is correctly resolved by all schemes and allowing adaptive schemes to use cells of width 1/8192 as in the reference solution would improve dramatically the resolution of all schemes.） Figure 3.2 shows the complete density component of the solution for the shock-acoustic wave interaction （a） together with the cell levels employed. Note that in the area behind the big shock, cells are kept to the maximum refinement level, while some coarsening is allowed in the smooth area between the small shocks on the left.On the right part of the figure （b）, we show the number of ceils used by the different adaptive algorithms as a function of time. It is clear that all algorithms use approximately the same number of ceils, and this number increases with time, as the solution evolves and more structures emerge. In Figure 3.3 we enlarge two areas of the solution to highlight the dif- ferences among the schemes. We observe that the MM method performs quite poorly on this problem, because of the clipping of extrema by the MinMod limiter: the acoustic wave is smeared due to grid coarsening before entering into the shock and the waves do not have the correct amplitude after the shock （b）.

## 编辑推荐

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