

## **On Lax-Wendroff's theorem**

*Raphaèle Herbin*

Aix-Marseille University, France

[raphaele.herbin@univ-amu.fr](mailto:raphaele.herbin@univ-amu.fr)

Among the numerous results due to Peter Lax, two theorems dealing with the convergence of numerical schemes for PDEs are well known: the Lax-Richtmyer theorem for linear PDEs and the Lax-Wendroff theorem for hyperbolic conservation laws. The latter is not often used for the convergence of schemes because it requires a strong assumption of compactness, which is difficult to demonstrate in practice.

On the other hand, it is nevertheless very useful to check a certain form of consistency of the diagrams, in particular in the case where few results exist as to the existence and uniqueness of continuous problems. Lax-Wendroff's theorem, initially written for uniform 1D meshes, has recently been generalized for this purpose to any meshes, including staggered meshes.