

Lax Wendroff consistency of a class of staggered schemes

Wednesday, November 17, 2021 9:00 AM (45 minutes)

Staggered schemes have been used for a long time for the numerical simulation of incompressible and compressible flows.

They are popular because of their inherent stability and asymptotic preserving properties. However, their mathematical analysis is rather recent, and rendered more difficult because of the staggered arrangement of the unknowns.

We have recently developed some tools which generalize the famous Lax Wendroff theorem for colocated or staggered finite volume convection operators.

We apply them to a class of staggered schemes which we have been studying for some years for the numerical simulation of compressible flows, and show that any bounded converging limit of one of these schemes is a weak solution to the original problem.

Joint work with Thierry Gallouët and Jean-Claude Latché.

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