Title:

RECENT ADVANCES IN NUMERICAL METHODS FOR HYPERBOLIC PROBLEMS

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Abstract:

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This mini-symposium is proposed for those interested in efficient computational algorithms for unsteady problems where hyperbolic phenomena dominate. There are many application areas for such algorithms - gas dynamics, aeroacoustics, geophysics are to name a few.

A particular attention is addressed to efficient modelling of linear/non-linear hyperbolic transport effects in multiple dimensions within a traditional engineering finite-difference, finite-volume or finite-element framework.

One challenging aspect of these applications is that traditionally numerical algorithms are optimised to emphasise one particular feature of the governing problem such as preserving linear wave propagation properties, the theory of characteristics or non-linear shock capturing. Additional difficulties arise if genuinely multidimensional features of the solution are to be considered.

A particular point of discussion we would like to rise here is the development and benchmarking of numerical algorithms which remain robust and accurate in multidimensional problems where both linear and non-linear solution regions coexist.