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15. Numerical Analysis and Scientific Computing

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Method of Transport – A Multidimensional Scheme for Nonlinear Hyperbolic Systems
In computational fluid dynamics, Riemann solver based algorithms have been used for a long time. However, due to the complexity of the governing equations (Euler, MHD), these apporaches usually get quite complicated and less efficient. We present an approach that is not based on Riemann solvers, the "Method of Transport" by M. Fey. After sketching the approach, we will present results for the 2d Euler equations and give an outlook on MHD, which will be the main area of future research of the author in the DFG special research project ANumE.
References: M. Fey, R. Jeltsch, J. Maurer, A. -T. Morel, "The Method of transport for nonlinear systems of hyperbolic conservation laws in several space dimensions. " (ETH-Report 97-12, ETH Z"urich, 1997)