XVIII INTERNATIONAL CONFERENCE ON HYPERBOLIC PROBLEMS
THEORY, NUMERICS, APPLICATIONS
Málaga, June 20-24, 2022

Exponential integrators for quasilinear hyperbolic evolution equations

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In this talk we propose two exponential integrators of first and second order applied to quasilinear hyperbolic evolution equations. We work in an analytical framework which is an extension of the classical Kato framework and covers quasilinear Maxwell's equations in full space and on a smooth domain as well as a class of quasilinear wave equations.

In contrast to earlier works, we do not assume regularity of the solution but only on the data. From this we deduce a well-posedness result upon which we base our error analysis.

Acknowledgements

Funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – Project-ID 258734477 – SFB 1173.

References

[1] B. Dörich and M. Hochbruck. Exponential integrators for quasilinear wave-type equations. *to appear in SIAM J. Numer. Anal.*, 2022. URL `https://www.waves.kit.edu/downloads/CRC1173_Preprint_2021-12.pdf`.

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