

THE CAUCHY PROBLEM FOR A CLASS OF LINEAR DEGENERATE EVOLUTION EQUATIONS ON THE TORUS

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ABSTRACT. We study, in the periodic setting, the well-posedness of the Cauchy problem associated to the operator

$$P(t, D_x, D_t) = D_t - a_2(t)\Delta_x + \sum_{j=1}^N a_{1,j}(t)D_{x_j} + a_0(t),$$

with $T > 0$, $t \in [0, T]$ and $a_2, a_{1,1}, \dots, a_{1,N}, a_0 \in C([0, T]; \mathbb{C})$.

Using Fourier analysis techniques, we obtain a complete characterization for the well-posedness of a class of degenerate initial-value problems in the Sobolev, Smooth, Gevrey and Real-Analytic frameworks.

Joint work with Alexandre Arias Jr.

REFERENCES

- [1] A. Arias Jr and B. de Lessa Victor. The Cauchy problem for a class of linear degenerate evolution equation on the torus. *arXiv preprint arXiv:2206.06418* (2022)..

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