

**GENERATION OF SEMIGROUPS
FOR VECTOR-VALUED PSEUDODIFFERENTIAL OPERATORS
ON THE TORUS**

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ABSTRACT. We consider toroidal pseudodifferential operators with operator-valued symbols, their mapping properties and the generation of analytic semigroups on vector-valued Besov and Sobolev spaces. We show that a parabolic toroidal pseudodifferential operator generates an analytic semigroup on the Besov space $B_{pq}^s(\mathbb{T}^n, E)$ and on the Sobolev space $W_p^k(\mathbb{T}^n, E)$, where E is an arbitrary Banach space, $1 \leq p, q \leq \infty$, $s \in \mathbb{R}$ and $k \in \mathbb{N}_0$. For the proof of the Sobolev space result, we establish a uniform estimate on the kernel which is given as an infinite parameter-dependent sum. An application to abstract non-autonomous periodic pseudodifferential Cauchy problems gives the existence and uniqueness of classical solutions for such problems.

This talk is based on joint work with B. Barraza Martínez, J. Hernández Monzón, and T. Nau.

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