



Leibniz  
Universität  
Hannover

**ONLINE**

# Oberseminar Analysis und Theoretische Physik

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### Trace-class properties of semi-groups associated with operator valued differential operators and their Witten index

This talk is an overview over my dissertation project, which was created under the supervision of Matthias Lesch at the University of Bonn, and was submitted in January 2021.

We consider the operator  $D = \partial + A(X)$  in  $L^2(\mathbb{R}, H)$ , where  $\partial$  is the closure of the derivative along  $\mathbb{R}$  in  $L^2(\mathbb{R}, H)$ , the operator  $A(X)$  is the fibre-wise multiplication in  $L^2(\mathbb{R}, H)$  by self-adjoint operators  $A(x)$ ,  $x \in \mathbb{R}$ , in a separable Hilbert space  $H$ , and there exist  $A_{\pm} = \lim_{x \rightarrow \pm\infty} A(x)$  as limiting operators in an appropriate sense.

We would like to investigate the index of  $D$  and related trace formulae of its associated semi-groups purely in terms of the operator family  $A(\cdot)$ , and the limiting operators  $A_{\pm}$ .

## Dienstag, 20.4.2021, 15:00 Uhr

Interessierte erhalten die Zugangsinformationen von  
Herrn Prof. Dr. Elmar Schrohe ([schrohe@math.uni-hannover.de](mailto:schrohe@math.uni-hannover.de)).

Mitglieder des Oberseminars haben Zugang über die Meetings der  
StudIP-Veranstaltung "Oberseminar Analysis und Theoretische Physik".

**Veranstalter:**

Prof. Dr. Wolfram Bauer, Prof. Dr. Joachim Escher, Prof. Dr. Johannes Lankeit,  
Prof. Dr. Elmar Schrohe, Prof. Dr. Christoph Walker