



## Dr. Martin Schäfer

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### Positive Discretization of Linear Functionals as Centerpiece for Various Exact Discretization Results

At the center of the talk is a new characterization of positive discretizability of linear functionals

$$L : V \rightarrow \mathbb{R},$$

where  $V$  is a finite-dimensional linear space of functions defined on a set  $\Omega$ . Positive discretizability of  $L$  means that there exist nodes  $x_1, \dots, x_N \in \Omega$  and non-negative weights  $\lambda_1, \dots, \lambda_N \geq 0$  such that

$$Lf = \sum_{j=1}^N \lambda_j f(x_j) \quad \text{for all } f \in V.$$

The new characterization draws a connection to the novel concept of strict  $S$ -positivity, a refinement of the classical notion of strict positivity. It asserts that the existence of a subset  $S \subseteq \Omega$  for which  $L$  is strictly  $S$ -positive is equivalent to  $L$  being positively discretizable. The proof is surprisingly elementary and the result allows a unified and simple derivation of other fundamental discretization results, reaching from Tchakaloff quadrature and exact Marcinkiewicz–Zygmund inequalities to the exact discretization of continuous Hilbert frames.

Herr Dr. Schäfer beabsichtigt, die Eröffnung eines Habilitationsverfahrens zu beantragen. Das Kolloquium wird von Prof. Dr. Tino Ullrich geleitet.

**Zeit:** Donnerstag, 09.04.2026, 16:00 Uhr

**Ort:** Reichenhainer Str. 90

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