**Montag**
14.04.25
12:00 Uhr, Raum E.11,
Geb. E2 6
Alle Interessierten
sind herzlich willkommen

# Quantum Information Science Talks

**UNIVERSITÄT DES SAARLANDES**

## Prof. Dr. Jeroen Zuiddam
University of Amsterdam

# Asymptotic spectrum duality and entanglement polytopes

Monday, April 14th, 2025 at 12:00 PM
Building E2 6, Room E.11

In 1969, Strassen shocked the computational world with a sub-cubic algorithm for multiplying matrices. Attempting to understand the best possible algorithm for this problem, he went on to develop asymptotic spectrum duality in three papers between 1986–1991.

Originally motivated by matrix multiplication, this duality theory has since found far-reaching applications across mathematics, computer science, and quantum information theory. It provides insights into problems governed by economies of scale, such as the cap set problem, zero-error Shannon capacity, and asymptotic entanglement transformations.

This talk traces a journey through the ideas of Strassen, Shannon, Schur, and Weyl, shedding light on how their work interconnects, and exploring, in particular, the central role of quantum information and entanglement polytopes.



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