



**Gemeinsames Forschungskolloquium
des Instituts für Mathematik II und des Instituts für Informatik
Wintersemester 2024/25**

Einladung

Liebe Kolleginnen und Kollegen, liebe Studierende, liebe Lehrkräfte, liebe alle,
hiermit laden wir Sie herzlich zum gemeinsamen Kolloquium des Instituts für Mathematik II
und des Instituts für Informatik der PH Ludwigsburg ein. Der Vortrag findet in Präsenz statt.

Datum	Mittwoch, 27.11.2024
Zeit	14.15 Uhr
Ort	5.211
Vortragender	Dr. Lorenzo Ciccione (CEA Neurospin - Université Paris Saclay)
Titel	The cognitive and neural bases of graph perception
Abstract	Although they are a recent cultural product, graphs are ubiquitous in our lives: they appear in newspapers, textbooks, on television, and professionals spend considerable time designing them. However, the cognitive and neural foundations of our ability to read graphs are not well understood. Among these foundations, the ability to intuitively grasp statistical regularities in graphs could be a crucial "building block" in the development of mathematical knowledge. We studied these intuitive abilities in both children and adults. Our results indicate that the precursors of "graphicacy" are present regardless of age, culture, and education level, and they are correlated with measures of mathematical and statistical skills. In educated participants (N=3943), 6-year-old first-grade students (N=23), and unschooled participants living in remote villages in Namibia (N=87), responses were beautifully predicted by an optimal statistical model. In 5- and 6-year-old children, we also found compelling evidence that they can recognize linear and non-linear functions and extend compositional patterns with a performance that far surpasses results previously reported in the literature. In adults, human ability to extract trends from graphs elicited activation of the numerical cognition network, as we demonstrated using fMRI. Taken together, these findings suggest that the ability to intuitively interpret graphical information is deeply rooted in the human cognitive system, emerging early in development and engaging core neural mechanisms related to numerical and statistical reasoning.



Wir freuen uns auf einen spannenden Vortrag mit zahlreichen interessierten Gästen! Da der Vortrag im Nachmittagsslot liegt, werden wir keine offizielle Nachsitzung planen. Informelle Gespräche mit dem Referenten können aber individuell vereinbart werden.

Herzliche Grüße,

Nina Sturm

Ute Sproesser