



# Workshop on Stochastic Analysis

IMECC - Unicamp

From August 10th to 13th, 2026



**Alexandra Holzinger**  
(Utrecht University)

## **Fluctuations Around the Mean-Field Limit for Attractive Riesz Interaction Kernels in the Moderate**

### **Abstract**

In this talk we will give a short introduction to moderately interacting particle systems and the general notion of fluctuations around the mean-field limit. We study a central limit theorem for moderately interacting particle systems on the whole space under specific choices of interaction potentials. The interaction potentials considered here approximate singular attractive potentials of sub-Coulomb type, and we show that the resulting fluctuations converge asymptotically to a Gaussian limit. The methodology is inspired by the classical work of Oelschläger in the 1980s on fluctuations for the porous-medium equation. To allow for attractive potentials we use a new approach of quantitative mean-field convergence in probability in order to include aggregation effects. This is joint work with Li Chen (University of Mannheim) and Ansgar Jüngel (TU Vienna).