

FAKULTÄT für PHYSIK  
LUDWIG-MAXIMILIANS-UNIVERSITÄT  
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT  
TECHNISCHE UNIVERSITÄT MÜNCHEN  
MÜNCHEN/GARCHING

## Garching Maier-Leibnitz-Kolloquium

Donnerstag, 15.06.2023, 16<sup>15</sup> Uhr

Hörsaal der LMU in Garching, Am Coulombwall 1  
Treffen zum gemeinsamen Kaffee 16 Uhr

**Prof. Tilo Wettig**

(Universität Regensburg)

### Gauge-equivariant multigrid neural networks

Lattice simulations are an important tool to compute nonperturbative results in quantum field theories such as QCD. The most time-consuming part in lattice calculations is the solution of the Dirac equation for a given SU(3) gauge field. In the interesting physical limits, critical slowing down occurs, which can be overcome by state-of-the-art multigrid methods. We introduce gauge-equivariant neural networks that can learn the general paradigms of a multigrid. These networks can perform equally well as standard multigrids but are more general and therefore have the potential to address a larger range of research questions.

*Hybrid online access via ZOOM:*

<https://lmu-munich.zoom.us/j/98457332925?pwd=TWc3V1JkSHpyOTBPQVIMelhuNnZ1dz09>

Meeting ID: 984 5733 2925

Passcode: 979953

gez. Peter Thirolf  
Tel. 289-14064

gez. Norbert Kaiser  
Tel. 289-12367