

FAKULTÄT für PHYSIK  
LUDWIG-MAXIMILIANS-UNIVERSITÄT  
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT  
TECHNISCHE UNIVERSITÄT MÜNCHEN  
MÜNCHEN/GARCHING

## Garching Maier-Leibnitz-Kolloquium

Donnerstag, 13.01.2022, 16<sup>15</sup> Uhr

Online via ZOOM:

<https://lmu-munich.zoom.us/j/98457332925?pwd=TWc3V1JkSHpyOTBPQVlMelhuNnZ1dz09>

Meeting ID: 984 5733 2925

Passcode: 979953

**Dr. David Wurm**

(Physik Department E66, TU München)

### **PanEDM: A precision measurement of the neutron electric dipole moment**

Precision experiments at low energies offer a complementary path towards new physics, which is currently inaccessible by accelerator experiments. In particular, the search for the electric dipole moment (EDM) of the neutron is a promising pathway to test for unknown manifestations of time-reversal invariance violating effects beyond the standard model of particle physics. Although ongoing for 70 years, new searches for the neutron EDM are very well motivated, with the next generation of experiments aiming to lower the current experimental sensitivity of  $(0.0 \pm 1.1_{stat} \pm 0.2_{syst}) 10^{-26}$  ecm by one to two orders of magnitude. The panEDM experiment by TUM and ILL uses trapped ultra cold neutrons (UCN) exposed to controlled magnetic and electric fields. Applying Ramsey's method of separated oscillatory fields creates an interferometer in time with a small phase proportional to the EDM. In this talk, the design and the current state of PanEDM will be presented, including its recent adaptation to SuperSUN, a new superthermal  $^4\text{He}$  UCN source and a series of technical developments to enable significant progress beyond the state of the art.

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