



Sommerfeld Theory Colloquium

Prof. Ignacio Cirac

MPQ Garching

Tensor Networks and Quantum Computers

Tensor Network States, like matrix product or projected entangled pair states play an important role in both, quantum information theory and many-body physics. They offer a compact and efficient representation, enabling accelerated numerical computations and providing intuitive insights into many-body phenomena. In this talk, I will discuss how certain states can be efficiently prepared and manipulated using quantum devices, highlighting the use of local operations and classical communication. Tensor networks can also be used to efficiently describe quantum channels. I will also mention how those channels can be efficiently implemented as quantum circuits.

Wednesday, 7 January 2026, 16:15h, Room A348, Theresienstr. 37/III

Prof. Ilka Brunner and Prof. Jan von Delft