

Universität Passau
Fakultät für Informatik und Mathematik

Kolloquium

auf Einladung von Frau Prof. Dr. Lydia Außenhofer

Prof. Dr. Karl-Hermann Neeb,
Lehrstuhl für Mathematik
(Lie-Gruppen und Darstellungstheorie),
Friedrich-Alexander-Universität Erlangen

**am Dienstag, den 15. Juli 2025 um 17:00 Uhr
im Hörsaal 11, IM, Innstr. 33
der Universität Passau**

Symmetries in Algebraic Quantum Field Theory

Abstract: After 100 years of quantum theory, we still don't know how to model spacetime consistently with all aspects of elementary particles and gravitation. Therefore it is important to understand the requirements on these structures from the perspective of mathematics. In this talk we shall explain the basic axioms and ingredients of Algebraic Quantum Field Theory and their implications for possible symmetry groups. A fascinating aspect of this theory is that symmetry groups are created from the quantum data alone as "modular groups". From a mathematical perspective, one then has to understand the structure of groups generated by modular one-parameter groups. On the group level, this leads us to the notion of an Euler element of a Lie algebra and on the geometric side, we find that so-called wedge regions play a key role.