Otto-von-Guericke-Universität Magdeburg
Fakultät für Mathematik

Auf Einladung des Institutes für Algebra und Geometrie spricht

Dr. Robert Zeier

(Forschungszentrum Jülich)

über das Thema

Lie-algebraic symmetry analysis for quantum computing

Zeit: Donnerstag, 1. Juni 2023, 12.00 Uhr, G03-214 oder
per Zoom Meeting ID 971 4945 5855, passcode 490213

Zu diesem Vortrag laden wir alle Interessierten herzlich ein.

Dr. Josh Maglione

Abstract: We develop algebraic and Lie-algebraic tools to analyze the dynamics of exponentially large quantum systems. Detecting and utilizing their inherent dynamical symmetries will enable us to more effectively control and program near-term quantum computers. We present symmetry methods [J. Math. Phys. 52(11):113510, 2011; J. Math. Phys. 56(8):081702, 2015; Phys. Rev. A 92(4):042309, 2015] which distinguish between different generated Lie algebras without explicitly constructing them. These Lie algebras are characterized using so-called quadratic symmetries related to the tensor power of a representation. Our symmetry methods are also applied to variational quantum algorithms for the maximum-cut problem.