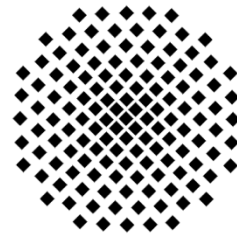


# Stuttgarter Physikalisches Kolloquium

Fachbereich Physik, Universität Stuttgart  
Max-Planck-Institut für Festkörperforschung  
Max-Planck-Institut für Intelligente Systeme

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Login data will be announced by e-mail and on the colloquia webpage

Dienstag, 29. Juni 2021

16:15 Uhr

Online-Vortrag

Universität Stuttgart, Pfaffenwaldring 57, 70569 Stuttgart-Vaihingen

Gastgeber: Prof. Dr. Maria Daghofer, Universität Stuttgart, Telefon: 0711 - 685-65255

## Tensor networks for classical and quantum computations

**Stefanos Kourtis**  
*University of Sherbrooke*

### Abstract

Tensor networks are multilinear-algebra data structures that are finding application in diverse fields of science, from quantum many-body physics to artificial intelligence. I will introduce tensor networks and illustrate how they can be used to represent classical and quantum computations. I will then motivate tensor network algorithms that perform or simulate computations in practice and demonstrate their performance on benchmarks of current interest, such as model counting and quantum circuit simulation. I will close with an outline of ongoing work and an outlook on future directions.