



# “Tensor network approach to higher-dimensional lattice field theories”

**by Shinichiro Akiyama (Tsukuba University)**

**Time and Date: 15:00-17:00, June 5, 2025**

**Place: Room 745, Science Complex B (H-03) (hybrid)**

**Registration: " <https://us02web.zoom.us/meeting/register/qTbVQ3uOQ8qeImAv6QWe2g>"**

Tensor networks offer a novel framework for studying quantum many-body systems. In particle physics, they have gained increasing attention as a promising numerical tool, especially for the lattice field theories suffering from the sign problem that are extremely difficult to be investigated by standard Monte Carlo simulations. These tensor network methods can be broadly categorized into two approaches: variational methods based on the Hamiltonian formalism, and real-space renormalization group (RG) methods based on the Lagrangian formalism. In this talk, I will briefly review both approaches and then present some of our recent applications of real-space RG techniques to various systems, including higher-dimensional lattice gauge theories.

**Contact :** Kazuhiro Watanabe (kazuhiro.watanabe.b8 [at] tohoku.ac.jp)