# Some recent developments in TRG

Naoki Kawashima
*The Institute for Solid State Physics, The University of Tokyo, Japan*

The tensor network offeres a natural language for computational physicists talking about renormalization group and scaling properties. In this sense, the real-space renormalization group, as a numerical method, is perhaps the one that benefits most from tensor network representations. I review some developments in tensor-network-based real space renormalization group (referred to as TNRG hereafter) in which I am involved. It includes (i) improvement of quality of the environment [1] , (ii) bond-weighted TNRG [2], (iii) entanglement filtering by nuclear norm regularization [3,4], (iv) TNRG procedure respecting the lattice reflection symmetries [5], and (v) linearization of the TNRG procedure for obtaining the scaling dimensions without resorting to dimension-specific CFT formula. [6]

[1] Feng-Feng Song and NK: arXiv:2508.10418v1
[2] Satoshi Morita and NK: PRB111, 054433 (2025)
[3] Kenji Homma, Tsuyoshi Okubo and NK: PRR6, 043102 (2024)
[4] Kenji Homma, Satoshi Morita and NK: PRB111, 134427 (2025)
[5] Xinliang Lyu and NK: arXiv:2510.19428v1
[6] Xinliang Lyu, RuQing G. Xu, NK: PRR3 023048 (2021)