

Tensor Networks, SoSe2021 (Lecturer: Hong-Hao Tu)

Lectures Tutorials	Mon + Thu Thu	Topic
L1	12.04.21	General introduction tensor network basics, diagrammatic representation
L2	15.04.21	Matrix Product State real-space renormalization, iterative diagonalization
L3	19.04.21	Matrix Product State Schmidt decomposition, canonical form of MPS
T1	22.04.21	
L4	26.04.21	Matrix Product State entanglement area law, MPS examples
L5	29.04.21	Matrix Product State AKLT model
L6	03.05.21	Matrix Product State MPS injectivity, parent Hamiltonian, correlation function
T2	06.05.21	
L7	10.05.21	Density Matrix Renormalization Group matrix product operator (MPO), single-site DMRG
	13.05.21	Christi Himmelfahrt (public holiday)
L8	17.05.21	Density Matrix Renormalization Group two-site DMRG, efficient implementations
T3	20.05.21	
L9	31.05.21	Density Matrix Renormalization Group fermionic systems
L10	03.06.21	Time evolution MPO-MPS evolution, truncation
L11	07.06.21	Time evolution Trotter-Suzuki decomposition, infinite time-evolving block decimation
T4	10.06.21	
L12	14.06.21	Time evolution time-dependent DMRG
L13	17.06.21	Time evolution finite-temperature methods, quantum transfer matrix
L14	21.06.21	Matrix Product State wave function renormalization
T5	24.06.21	
L15	28.06.21	Matrix Product State MPS with symmetry
L16	01.07.21	Matrix Product State classification of 1D gapped phases
L17	05.07.21	Projected Entangled Pair State motivation, definition, examples
T6	08.07.21	
L18	12.07.21	Projected Entangled Pair State simple and full updates, MPS-based contraction schemes
L19	15.07.21	Tensor network contractions classical statistical models, tensor renormalization group
L20	19.07.21	Tensor network contractions tensor network renormalization
T7	22.07.21	