References to lectures on quantum matter
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This is a list of references related to the topics covered during my lecture on quantum/entangled matter; obviously, there are many important references that are not in the list, and I want to apologize for this. The lectures were very much focused on describing ground states of quantum spin systems using tensor network states.

I. REFERENCES

- Definition of phases as ground states related by low-depth quantum circuits:
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  - arXiv:1008.5137 : Locality in Quantum Systems, M. B. Hastings
  - quant-ph/0603121 : Lieb-Robinson bounds and the generation of correlations and topological quantum order, S. Bravyi, M. B. Hastings, F. Verstraete.
- Counting argument of number of equivalence classes in Hilbert space
  - arXiv:1102.1360 : Quantum simulation of time-dependent Hamiltonians and the convenient illusion of Hilbert space, David Poulin, Angie Qarry, R. D. Somma, Frank Verstraete
- Lieb Robinson bounds
  - arXiv:1008.5137 : Locality in Quantum Systems, M. B. Hastings
  - math-ph/0507008 : Spectral Gap and Exponential Decay of Correlations, Matthew B. Hastings, Tohru Koma
  - math-ph/0506030 : Lieb-Robinson Bounds and the Exponential Clustering Theorem, Bruno Nachtergaele, Robert Sims
- quasi-adiabatic evolution and applications (Goldstone theorem + stability of area law)
  - cond-mat/0503554 : Quasi-adiabatic Continuation of Quantum States: The Stability of Topological Ground State Degeneracy and Emergent Gauge Invariance M. B. Hastings, Xiao-Gang Wen
  - arXiv:quant-ph/0601019 : Simulating adiabatic evolution of gapped spin systems, Tobias J. Osborne
  - arXiv:1008.5137 : Locality in Quantum Systems, M. B. Hastings
  - arXiv:cond-mat/0612538 : Quasi-Adiabatic Continuation in Gapped Spin and Fermion Systems: Goldstone's Theorem and Flux Periodicity, M. B. Hastings
  - arXiv:1304.5931 : Entanglement rates and area laws, Karel Van Acoleyen, Michal Marin, Frank Verstraete
- Dual picture of ground state problem as characterization of marginals:
  - arXiv:cond-mat/0505140 : Matrix product states represent ground states faithfully, F. Verstraete, J.I. Cirac
- Area laws
  - arXiv:quant-ph/0304098: Ground state entanglement in quantum spin chains, J. I. Latorre, E. Rico, G. Vidal
  - arXiv:0704.3906 : Area laws in quantum systems: mutual information and correlations, M.M. Wolf, F. Verstraete, M.B. Hastings, J.I. Cirac
  - arXiv:0705.2024 : An Area Law for One Dimensional Quantum Systems, M. B. Hastings

  - arXiv:0808.3773 : Area laws for the entanglement entropy - a review, J. Eisert, M. Cramer, M.B. Plenio

- Feynman's view on variational methods for quantum many body systems
  - R. P. Feynman, Proceedings of the International Workshop on Variational Calculations in Quantum Field Theory held in Wangarooge, West Germany (L. Polley and D. E. L. Pottinger, eds.), World Scientific Publishing, Singapore, pp. 2840 (1987).
  - arXiv:1006.2409 : Applying the variational principle to (1+1)-dimensional quantum field theories, Jutho Haegeman, J. Ignacio Cirac, Tobias J. Osborne, Henri Verschelde, Frank Verstraete

- Matrix Product States and Projected Entangled Pair States
  - Reviews covering theoretical aspects
    * arXiv:quant-ph/0608197 : Matrix Product State Representations, D. Perez-Garcia, F. Verstraete, M.M. Wolf, J.I. Cirac.
    * arXiv:0907.2796 : Matrix Product States, Projected Entangled Pair States, and variational renormalization group methods for quantum spin systems, F. Verstraete, J.I. Cirac, V. Murg
    * arXiv:0910.1130: Renormalization and tensor product states in spin chains and lattices, J. I. Cirac, F. Verstraete
    * arXiv:1306.5551: Condensed Matter Applications of Entanglement Theory, Norbert Schuch
  - precursors in mathematical physics:
    * Affleck, Ian; Kennedy, Tom; Lieb, Elliott H.; Tasaki, Hal (1987). "Rigorous results on valence-bond ground states in antiferromagnets". Physical Review Letters 59 (7): 799802.
    * Comm. Math. Phys. 144, 3 (1992), 429-648, Finitely correlated states on quantum spin chains, M. Fannes,B. Nachtergaele, and R. F. Werner
  - PEPS
    * arXiv:quant-ph/0311130 : Valence Bond Solids for Quantum Computation, F. Verstraete, J.I. Cirac
    * arXiv:cond-mat/0407066 : Renormalization algorithms for Quantum-Many Body Systems in two and higher dimensions, F. Verstraete, J. I. Cirac
  - Geometry of MPS manifold and time evolution with MPS
    * arXiv:1210.7710: Geometry of Matrix Product States: metric, parallel transport and curvature, Jutho Haegeman, Michal Marin, Tobias J. Osborne, Frank Verstraete
    * arXiv:1103.0936 : Time-dependent variational principle for quantum lattices, Jutho Haegeman, J. Ignacio Cirac, Tobias J. Osborne, Iztok Pizorn, Henri Verschelde, Frank Verstraete
    * arXiv:quant-ph/0310089 , Efficient simulation of one-dimensional quantum many-body systems, G. Vidal
    * arXiv:cond-mat/0406426 : Matrix Product Density Operators: Simulation of finite-T and dissipative systems, F. Verstraete, J. J. Garcia-Ripoll, J. I. Cirac
    * arXiv:1305.1894 : Post-Matrix Product State Methods: To tangent space and beyond, Jutho Haegeman, Tobias J. Osborne, Frank Verstraete
  - MPS for critical systems
    * arXiv:0812.2903 : Theory of finite-entanglement scaling at one-dimensional quantum critical points, Frank Pollmann, Subroto Mukerjee, Ari Turner, Joel E. Moore
    * arXiv:1204.3934 : Matrix product states for critical spin chains: finite size scaling versus finite entanglement scaling, B. Pirvu, G. Vidal, F. Verstraete, L. Tagliacozzo
  - Multiscale entanglement renormalization ansatz
    * arXiv:quant-ph/0610099 , A class of quantum many-body states that can be efficiently simulated,G. Vidal
    * arXiv:0912.1651 : Entanglement Renormalization: an introduction, Guifre Vidal
    * arXiv:1109.5424 : Foundations and Applications of Entanglement Renormalization, Glen Evenbly
  - Symmetries in MPS and classification of phases
    * arXiv:0802.0447 : String order and symmetries in quantum spin lattices, D. Perez-Garcia, M.M. Wolf, M. Sanz, F. Verstraete, J.I. Cirac.

* arXiv:0909.4059 : Symmetry protection of topological order in one-dimensional quantum spin systems, Frank Pollmann, Erez Berg, Ari M. Turner, Masaki Oshikawa
* arXiv:1008.3745 : Classification of Gapped Symmetric Phases in 1D Spin Systems, Xie Chen, Zheng-Cheng Gu, Xiao-Gang Wen
* arXiv:1010.3732 : Classifying quantum phases using Matrix Product States and PEPS, Norbert Schuch, David Perez-Garcia, Ignacio Cirac

– Dispersion relations with MPS

* arXiv:1103.2286 : Variational matrix product ansatz for dispersion relations, Jutho Haegeman, Bogdan Pirvu, David J. Weir, J. Ignacio Cirac, Tobias J. Osborne, Henri Verschelde, Frank Verstraete
* arXiv:1212.1114 : Particles, holes and solitons: a matrix product state approach, Damian Draxler, Jutho Haegeman, Tobias J. Osborne, Vid Stojevic, Laurens Vanderstraeten, Frank Verstraete
* arXiv:1305.2176 : Elementary excitations in gapped quantum spin systems, Jutho Haegeman, Spyridon Michalakis, Bruno Nachtergaele, Tobias J. Osborne, Norbert Schuch, Frank Verstraete

– Edge modes for PEPS

* arXiv:1103.3427, Entanglement spectrum and boundary theories with projected entangled-pair states, J. Ignacio Cirac, Didier Poilblanc, Norbert Schuch, Frank Verstraete
* arXiv:1309.4596 : Edge theories in Projected Entangled Pair State models, S. Yang, L. Lehman, D. Poilblanc, K. Van Acoleyen, F. Verstraete, J.I. Cirac, N. Schuch
* arXiv:1210.5601 : Topological order in PEPS: Transfer operator and boundary Hamiltonians, Norbert Schuch, Didier Poilblanc, J. Ignacio Cirac, David Perez-Garcia

– Numerical aspects of MPS / DMRG / PEPS

* Phys. Rev. Lett. 69, 28632866 (1992) : Density matrix formulation for quantum renormalization groups, Steven R. White
* arXiv:0907.2796 : Matrix Product States, Projected Entangled Pair States, and variational renormalization group methods for quantum spin systems, F. Verstraete, J.I. Cirac, V. Murg
* arXiv:1008.3477 : The density-matrix renormalization group in the age of matrix product states, Ulrich Schollwoeck
* arXiv:1306.2164 : A Practical Introduction to Tensor Networks: Matrix Product States and Projected Entangled Pair States, Roman Orus