

Windsor Summer School 2007

References for Halperin's lectures on theory of quantum Hall effects.

I. Books on the quantum Hall effects:

J. Jain, Composite Fermions (Cambridge University Press, 2007)

D. Yoshioka, The Quantum Hall Effect, (Springer, 2002)

O. Heinonen, editor, Composite Fermions, (World Scientific, 1998)

S. Das Sarma and A. Pinczuk, editors, Perspectives in Quantum Hall Effects, (Wiley 1997) *Comment:* Contains article by B. I. Halperin on Fermion-Chern-Simons theory of the half-filled Landau level.

T. Chakraborty and P. Piettilainen, The Quantum Hall Effects: Integral and Fractional, (Springer 1995)

R. E. Prange and S. M. Girvin, editors, The Quantum Hall Effect, (Springer 1990) 2nd ed.

Z. F. Ezawa, Quantum Hall Effects: Field Theoretical approach and Related Topics, (World Scientific, 2000)

II. Articles available on the web. References listed as cond-mat are available free from xxx.arXiv.cornell.edu .

A. References on the Fermion-Chern-Simons picture

1. "Composite Fermions and the Fermion-Chern-Simons Theory",
Bertrand I. Halperin, cond-mat/9812135
Comments: 13 pages, including 2 figures. Invited talk at International Symposium, Quantum Hall Effect: Past, Present and Future, Stuttgart, July 2003. Physica E **20**, 71 (2003).

2. "Half-filled Landau level as a Fermi liquid of dipolar quasiparticles",
A. Stern, B. I. Halperin, F. von Oppen, S. H. Simon, cond-mat/9812135
Phys. Rev. B **58**, 13539 (1998)

3. "The Chern-Simons Fermi Liquid Description of Fractional Quantum Hall States",
Steven H. Simon cond-mat/9812186
Comments: 104 pages, Chapter in "Composite Fermions", ed. O. Heinonen, (World Scientific 1998).

4. "Hamiltonian Theories of the FQHE", Ganpathy Murthy, R.Shankar, Rev. Mod. Phys. October 2003; cond-mat/0205326

5. "Theory of the half-filled Landau level." B. I. Halperin, P. A. Lee, and N. Read, Phys. Rev. B 47, 7312 (1993)

B. Some references on other topics mentioned in the lectures.

6. "Quantized Hall conductance, current-carrying edge states, and the existence of extended states in a two-dimensional disordered potential," B. I. Halperin, Phys. Rev. B 25, 2185 (1982).

7. "Paired states of fermions in two dimensions with breaking of parity and time-reversal symmetries, and the fractional quantum Hall effect",

N. Read and Dmitry Green, cond-mat/9906453, Phys.Rev. B **61** (2000) 10267

Comment: Discusses states with non-abelian statistics, such as the Pfaffian state at filling fraction $5/2$, from the point of view of fermion-Chern-Simons theory.

8. "Bose-Einstein condensation of excitons in bilayer electron systems,"

J. P. Eisenstein and A. H. MacDonald, cond-mat /0404113

9. "A dc voltage step-up transformer based on a bi-layer $\nu=1$ quantum Hall system"

B. I. Halperin, Ady Stern, and S. M. Girvin, cond-mat/0301442

Phys. Rev. B **67**, 234323 (2003)

10. "Non-Abelian Anyons and Topological Quantum Computation",

Sankar Das Sarma, Michael Freedman, Chetan Nayak, Steven H. Simon, Ady Stern, arXiv:0707.1889, to appear in Rev. Mod. Phys.

11. "Particle-hole symmetry and the Pfaffian state," Michael Levin, Bertrand I. Halperin, Bernd Rosenow, arXiv:0707.0483

C. References on Stripe and Bubble Phases and Re-entrant Integer Quantized Hall Conductance in Higher Landau Levels. Topic discussed in PDF file for Halperin's Lecture 4, but not actually covered during lecture.

12. "Striped quantum Hall phases", Felix von Oppen, Bertrand I. Halperin, and Ady Stern, cond-mat/0002087, Advances in Quantum Many-Body Theory, vol. 3, edited by R.F. Bishop, N.R. Walet, and Y. Xian (World Scientific 2000)

Comment: Has references that will give an entry into work on striped (charge-density-wave) phases in higher Landau levels.

13. "Theory of Quantum Hall Nematics,"

Leo Radzihovsky (University of Colorado), Alan T. Dorsey (University of Florida), arXiv:cond-mat/0110083, Phys. Rev. Lett. 88, 216802 (2002)

14. "Observation of narrow-band noise accompanying the breakdown of insulating states in high Landau levels," K.B. Cooper, J.P. Eisenstein, L.N. Pfeiffer, K.W. West, Phys. Rev. Lett. 90, 226803 (2003), arXiv:cond-mat/0210069

15 "Metastable Resistance Anisotropy Orientation of Two-Dimensional Electrons in High Landau Levels", K.B. Cooper, J.P. Eisenstein, L.N. Pfeiffer, K. W. West, arXiv:cond-mat/0309625, Phys. Rev. Lett. (2004).