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LIST OF PUBLICATIONS

PUBLICATIONS IN REFEREED JOURNALS

1. (with E.H. Lieb and J. Yngvason) *Bosons in a trap: A rigorous derivation of the Gross-Pitaevskii energy functional*, Phys. Rev. A **61**, 043602-1–13 (2000).
2. (with B. Baumgartner) *On the Ordering of Energy Levels in Homogeneous Magnetic Fields*, Lett. Math. Phys. **54**, 213–226 (2000).
3. (with E.H. Lieb and J. Yngvason) *A Rigorous Derivation of the Gross-Pitaevskii Energy Functional for a Two-Dimensional Bose Gas*, Commun. Math. Phys. **224**, 17–31 (2001).
4. *On the maximal ionization of atoms in strong magnetic fields*, J. Phys. A: Math. Gen. **34**, 1943–1948 (2001).
5. (with B. Baumgartner) *Atoms with Bosonic “Electrons” in Strong Magnetic Fields*, Ann. Henri Poincaré **2**, 41–76 (2001).
6. (with C. Hainzl) *A Discrete Density Matrix Theory for Atoms in Strong Magnetic Fields*, Commun. Math. Phys. **217**, 229–248 (2001).
7. (with C. Hainzl) *Bounds on One-Dimensional Exchange Energies with Application to Lowest Landau Band Quantum Mechanics*, Lett. Math. Phys. **55**, 133–142 (2001).
8. (with C. Hainzl) *General Decomposition of Radial Functions on \mathbb{R}^n and Applications to N -Body Quantum Systems*, Lett. Math. Phys. **61**, 75–84 (2002).
9. *Gross-Pitaevskii Theory of the Rotating Bose Gas*, Commun. Math. Phys. **229**, 491–509 (2002).

10. (with E.H. Lieb) *Proof of Bose-Einstein Condensation for Dilute Trapped Gases*, Phys. Rev. Lett. **88**, 170409-1–4 (2002).
11. (with E.H. Lieb and J. Yngvason) *Superfluidity in dilute trapped Bose gases*, Phys. Rev. B **66**, 134529-1–6 (2002).
12. (with C. Hainzl) *Mass Renormalization and Energy Level Shift in Non-Relativistic QED*, Adv. Theor. Math. Phys. **6**, 847–871 (2002).
13. (with E.H. Lieb and J. Yngvason) *Poincaré Inequalities in Punctured Domains*, Ann. Math. **158**, 1067–1080 (2003).
14. (with E.H. Lieb and J. Yngvason) *One-dimensional Bosons in Three-dimensional Traps*, Phys. Rev. Lett. **91**, 150401-1–4 (2003).
15. *Ground state asymptotics of a dilute, rotating gas*, J. Phys. A: Math. Gen. **36**, 9755–9778 (2003).
16. (with E.H. Lieb) *Equivalent forms of the Bessis-Moussa-Villani conjecture*, J. Stat. Phys. **115**, 185–190 (2004).
17. (with E.H. Lieb and J. Yngvason) *One-Dimensional Behavior of Dilute, Trapped Bose Gases*, Commun. Math. Phys. **244**, 347–393 (2004).
18. (with M. Aizenman, E.H. Lieb, J.P. Solovej and J. Yngvason) *Bose-Einstein quantum phase transition in an optical lattice model*, Phys. Rev. A **70**, 023612-1–12 (2004).
19. (with E.H. Lieb and J. Yngvason) *Justification of c-Number Substitutions in Bosonic Hamiltonians*, Phys. Rev. Lett. **94**, 080401-1–4 (2005).
20. (with E.H. Lieb and J.P. Solovej) *Ground-state energy of the low-density Fermi gas*, Phys. Rev. A **71**, 053605-1–13 (2005).
21. (with E.H. Lieb) *Stronger subadditivity of entropy*, Phys. Rev. A **71**, 062329-1–9 (2005).
22. *The Thermodynamic Pressure of a Dilute Fermi Gas*, Commun. Math. Phys. **261**, 729–758 (2006).
23. (with E.H. Lieb) *Derivation of the Gross-Pitaevskii Equation for Rotating Bose Gases*, Commun. Math. Phys. **264**, 505–537 (2006).
24. *A Correlation Estimate for Quantum Many-Body Systems at Positive Temperature*, Rev. Math. Phys. **18**, 233–253 (2006).

25. (with R.L. Frank, A. Laptev and E.H. Lieb) *Lieb-Thirring Inequalities for Schrödinger Operators with Complex-valued Potentials*, Lett. Math. Phys. **77**, 309–316 (2006).
26. *On the failure of subadditivity of the Wigner-Yanase entropy*, Lett. Math. Phys. **80**, 285–288 (2007).
27. (with R.L. Frank and E.H. Lieb) *Stability of Relativistic Matter with Magnetic Fields for Nuclear Charges up to the Critical Value*, Commun. Math. Phys. **275**, 479–489 (2007).
28. (with R.L. Frank, E.H. Lieb, and H. Siedentop) *Müller’s exchange-correlation energy in density-matrix-functional theory*, Phys. Rev. A **76**, 052517-1–16 (2007).
29. (with R.L. Frank and E.H. Lieb) *Number of Bound States of Schrödinger Operators with Matrix-Valued Potentials*, Lett. Math. Phys. **82**, 107–116 (2007).
30. (with R.L. Frank, C. Hainzl, and S. Naboko) *The critical temperature for the BCS equation at weak coupling*, J. Geom. Anal. **17**, 559–568 (2007).
31. *Free Energy of a Dilute Bose Gas: Lower Bound*, Commun. Math. Phys. **279**, 595–636 (2008).
32. (with J. Yin) *Ground state energy of the low density Hubbard model*, J. Stat. Phys. **131**, 1139–1154 (2008).
33. (with C. Hainzl) *Critical temperature and energy gap for the BCS equation*, Phys. Rev. B **77**, 184517-1–10 (2008).
34. (with C. Hainzl, E. Hamza, and J.P. Solovej) *The BCS Functional for General Pair Interactions*, Commun. Math. Phys. **281**, 349–367 (2008).
35. (with C. Hainzl) *The BCS Critical Temperature for Potentials with Negative Scattering Length*, Lett. Math. Phys. **84**, 99–107 (2008).
36. (with R.L. Frank and E.H. Lieb) *Hardy-Lieb-Thirring inequalities for fractional Schrödinger operators*, J. Amer. Math. Soc. **21**, 925–950 (2008).
37. (with J. Yin) *The Lieb-Liniger Model as a Limit of Dilute Bosons in Three Dimensions*, Commun. Math. Phys. **284**, 459–479 (2008).
38. (with R.L. Frank) *Non-linear ground state representations and sharp Hardy inequalities*, J. Funct. Anal. **255**, 3407–3430 (2008).

39. (with C. Hainzl and M. Lewin) *A Nonlinear Model for Relativistic Electrons at Positive Temperature*, Rev. Math. Phys. **20**, 1283–1307 (2008).
 40. (with A. Giuliani) *The Ground State Energy of the Weakly Interacting Bose Gas at High Density*, J. Stat. Phys. **135**, 915–934 (2009).
 41. (with E.H. Lieb and J. Yngvason) *Yrast line of a rapidly rotating Bose gas: Gross-Pitaevskii regime*, Phys. Rev. A **79**, 063626 (2009).
 42. (with D. Ueltschi) *Rigorous upper bound on the critical temperature of dilute Bose gases*, Phys. Rev. B **80**, 014502 (2009).
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PREPRINTS

- (with J. Predd, E.H. Lieb, D. Osherson, V. Poor, and S. Kulkarni) *Probabilistic coherence and proper scoring rules*, arXiv:0710.3183, IEEE T. Inform. Theory (in press)
 - (with C. Hainzl) *Asymptotic behavior of eigenvalues of Schrödinger type operators with degenerate kinetic energy*, arXiv:0808.3737
 - (with R. Frank and A. Laptev) *A sharp bound on eigenvalues of Schrödinger operators on the halfline with complex-valued potentials*, arXiv:0903.2053
 - (with M. Lewin) *Strongly correlated phases in rapidly rotating Bose gases*, arXiv:0906.0741
 - (with R.L. Frank) *Sharp fractional Hardy inequalities in half-spaces*, arXiv:0906.1561
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BOOKS

- (with E.H. Lieb, J.P. Solovej and J. Yngvason) *The Mathematics of the Bose Gas and its Condensation*, Oberwolfach Seminars, Vol. 34, Birkhäuser (2005).
 - (with E.H. Lieb) *The Stability of Matter in Quantum Mechanics*, Cambridge Univ. Press, to appear.
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CONFERENCE PROCEEDINGS

1. (with E.H. Lieb and J. Yngvason) *The Ground State Energy and Density of Interacting Bosons in a Trap*, in: Quantum Theory and Symmetries, Goslar, 1999,

- H.-D. Doebner, V.K. Dobrev, J.-D. Hennig, and W. Luecke, eds., 101–110, World Scientific (2000).
2. *Bosons in a Trap: Asymptotic Exactness of the Gross-Pitaevskii Ground State Energy Formula*, in: Partial Differential Equations and Spectral Theory, PDE2000 Conference in Clausthal, Germany, M. Demuth and B.-W. Schulze, eds., 307–314, Birkhäuser (2001).
 3. (with E.H. Lieb and J. Yngvason) *Two-Dimensional Gross-Pitaevskii Theory*, in: Progress in Nonlinear Science, Proceedings of the International Conference Dedicated to the 100th Anniversary of A.A. Andronov, Volume II, A.G. Litvak, ed., 582–590, Nizhny Novgorod, Institute of Applied Physics, University of Nizhny Novgorod (2002).
 4. *Symmetry Breaking in a Model of a Rotating Bose Gas*, in: Mathematical Results in Quantum Mechanics, Proceedings of QMath8, Taxco, Amer. Math. Soc. Contemporary Math. series, 281–286 (2002).
 5. (with E.H. Lieb, J.P. Solovej and J. Yngvason) *The Ground State of the Bose Gas*, in: Current Developments in Mathematics, 2001, 131–178, International Press, Cambridge (2002).
 6. (with E.H. Lieb) *Bose-Einstein Condensation of Dilute Gases in Traps*, in: Advances in Differential Equations and Mathematical Physics, Birmingham, Alabama, March 26-30, 2002, Y. Karpeshina et al., eds., 239–250, Amer. Math. Soc. (2003).
 7. (with E.H. Lieb, J.P. Solovej and J. Yngvason) *The Quantum-Mechanical Many-Body Problem: The Bose Gas*, in: Perspectives in Analysis, Essays in Honor of L. Carleson's 75th Birthday, Series: Mathematical Physics Studies, Vol. 27, M. Benedicks, P. Jones, S. Smirnov (Eds.), Springer (2005).
 8. *Dilute, Trapped Bose Gases and Bose-Einstein Condensation*, in: Large Coulomb Systems, Lect. Notes Phys. **695**, 251–276, J. Dereziński, H. Siedentop, eds., Springer (2006).
 9. (with E.H. Lieb and J. Yngvason) *One-dimensional behavior of dilute Bose gases in traps*, in: XIVth International Congress on Mathematical Physics, Lisbon 28 July – 2 August 2003, J.-C. Zambrini, ed., World Scientific (2006).
 10. (with M. Aizenman, E.H. Lieb, J.P. Solovej and J. Yngvason) *Bose-Einstein Condensation as a Quantum Phase Transition in an Optical Lattice*, in: Mathematical Physics of Quantum Mechanics, J. Asch and A. Joye (Eds.), Lecture Notes in Physics **690**, 199–215, Springer (2006).

11. (with E.H. Lieb and J.P. Solovej) *Ground-State Energy of a Dilute Fermi Gas*, in: Recent Advances in Differential Equations and Mathematical Physics, N. Chernov, Y. Karpeshina, I. Knowles, R. Lewis, R. Weikard, eds., Amer. Math. Soc. Contemporary Math. series **412**, 239–248 (2006).
12. (with E.H. Lieb and J. Yngvason) *Bose-Einstein Condensation and Spontaneous Symmetry Breaking*, Proceedings of the 21st Max Born Symposium, Wroclaw, Poland, June 26–28, 2006, Rep. Math. Phys. **59**, 389–399 (2007).
13. *Vortices and Spontaneous Symmetry Breaking in Rotating Bose Gases*, in: Mathematical Results in Quantum Mechanics, proceedings of QMath10, Moeciu, Romania, September 10–15, 2007, World Scientific (2008).
14. (with C. Hainzl) *Spectral properties of the BCS gap equation of superfluidity*, in: Mathematical Results in Quantum Mechanics, proceedings of QMath10, Moeciu, Romania, September 10–15, 2007, World Scientific (2008).
15. (with C. Hainzl) *A linear criterion for solutions of non-linear equations, with application to the BCS gap equation*, to appear in the proceedings of "Spectral and Scattering Theory for Quantum Magnetic Systems", CIRM, Marseille, Amer. Math. Soc. Contemp. Math. Series.