

List of Publications and Preprints

- 1) J. Fröhlich, M. Griesemer, and B. Schlein. Asymptotic electromagnetic fields in models of quantum-mechanical matter interacting with the quantized radiation field. *Adv. Math.* **164** (2001), no. 2, 349–398.
- 2) J. Fröhlich, M. Griesemer, and B. Schlein. Asymptotic completeness for Rayleigh scattering. *Ann. Henri Poincaré* **3** (2002), no. 1, 107–170.
- 3) A. Elgart and B. Schlein. Adiabatic charge transport and the Kubo formula for Landau type Hamiltonians. *Comm. Pure Appl. Math.* **57** (2004), no. 5, 590–615.
- 4) J. Fröhlich, M. Griesemer, and B. Schlein. Asymptotic completeness for Compton scattering. *Comm. Math. Phys.* **252** (2004), 415–476.
- 5) A. Elgart, L. Erdős, B. Schlein, and H.-T. Yau. Nonlinear Hartree equation as the mean field limit of weakly coupled fermions. *J. Math. Pures Appl.* (9) **83** (2004), no. 10, 1241–1273.
- 6) A. Elgart, L. Erdős, B. Schlein, and H.-T. Yau. Gross-Pitaevskii equation as the mean field limit of weakly coupled bosons. *Arch. Ration. Mech. Anal.* **179** (2006), no. 2, 265–283.
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- 8) L. Erdős, B. Schlein, and H.-T. Yau. Derivation of the Gross-Pitaevskii hierarchy for the dynamics of Bose-Einstein condensate. *Comm. Pure Applied Math.* **59** (2006), no. 12, 1659–1741.
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- 11) L. Erdős, B. Schlein, and H.-T. Yau. Derivation of the cubic non-linear Schrödinger equation from quantum dynamics of many-body systems. *Invent. Math.* **167** (2007), no. 3, 515–614.
- 12) J. Fröhlich, M. Griesemer, B. Schlein. Rayleigh scattering at atoms with dynamical nuclei. *Comm. Math. Phys.* **271** (2007), no. 2, 387–430.

- 13) L. Erdős, B. Schlein, and H.-T. Yau. Derivation of the Gross-Pitaevskii equation for the dynamics of Bose-Einstein condensates. *Ann. of Math. (2)* **172** (2010), no. 1, 291–370.
- 14) L. Erdős, B. Schlein, and H.-T. Yau. Rigorous derivation of the Gross-Pitaevskii equation. *Phys. Rev. Lett.* **98** (2007), no. 4, 040404.
- 15) B. Schlein. Dynamics of Bose-Einstein Condensates. *New Trends in Mathematical Physics*. Selected contributions of the XVth International Congress on Mathematical Physics, edited by V. Sidoravicius, Springer Verlag, 2009, 565-589.
- 16) L. Erdős, B. Schlein, and H.-T. Yau. Semicircle law on short scales and delocalization of eigenvectors for Wigner random matrices. *Ann. Probab.* **37** (2009), no. 3, 815–852.
- 17) I. Rodnianski and B. Schlein. Quantum fluctuation and rate of convergence towards mean field dynamics. *Comm. Math. Phys.* **291** (2009), no. 1, 31–61.
- 18) B. Nachtergaele, H. Raz, B. Schlein, and R. Sims. Lieb-Robinson bounds for harmonic and anharmonic lattice systems. *Comm. Math. Phys.* **286** (2009), no. 3, 1073–1098.
- 19) L. Erdős, B. Schlein, and H.-T. Yau. Rigorous derivation of the Gross-Pitaevskii equation with a large interaction potential. *J. Amer. Math. Soc.* **22** (2009), no. 4, 1099-1156.
- 20) L. Erdős, B. Schlein, and H.-T. Yau. Local semicircle law and complete delocalization for Wigner random matrices. *Comm. Math. Phys.* **287** (2009), no. 2, 641–655.
- 21) C. Hainzl and B. Schlein. Stellar collapse in the time dependent Hartree-Fock approximation. *Comm. Math. Phys.* **287** (2009), no. 2, 705-717.
- 22) L. Erdős and B. Schlein. Quantum dynamics with mean field interactions: a new approach. *J. Statist. Phys.* **134** (2009), no. 5, 859–870.
- 23) L. Erdős, B. Schlein, and H.-T. Yau. The ground state energy of a low density Bose gas: a second order upper bound. *Phys. Rev. A* **78** (2008), no. 5, 053627.
- 24) B. Schlein. Derivation of effective evolution equations from microscopic quantum dynamics. *Evolution Equations, CMI Summer School, ETH 2008*. Clay Mathematics Proceedings, **17**, 2013. Edited by D. Ellwood, I. Rodnianski, G. Staffilani, J. Wunsch. 511–572.

- 25) L. Erdős, A. Michelangeli, and B. Schlein. Dynamical formation of correlations in a Bose-Einstein condensate. *Comm. Math. Phys.* **289** (2009), no. 3, 1171–1210.
- 26) K. Kirkpatrick, B. Schlein, and G. Staffilani. Derivation of the two dimensional nonlinear Schrodinger equation from many body quantum dynamics. *Amer. J. Math.* **133** (2011), no.1, 91-130.
- 27) L. Erdős, B. Schlein, and H.-T. Yau. Wegner estimate and level repulsion for Wigner random matrices. *Int. Math. Res. Not. IMRN* **2010**, no. 3, 436–479.
- 28) L. Erdős, J. A. Ramirez, B. Schlein, and H.-T. Yau. Universality of sine-kernel for Wigner matrices with a small Gaussian perturbation. *Electron. J. Probab.* **15** (2010), no. 18, 526–603.
- 29) L. Erdős, S. Péché, J. A. Ramirez, B. Schlein, and H.-T. Yau. Bulk universality for Wigner matrices. *Comm. Pure Appl. Math.* **63** (2010), no. 7, 895–925.
- 30) L. Erdős, J. A. Ramirez, B. Schlein, T. Tao, V. Vu, and H.-T. Yau. Bulk universality for Wigner hermitian matrices with subexponential decay. *Math. Res. Lett.* **17** (2010), no. 4, 667–674.
- 31) L. Erdős, B. Schlein, and H.-T. Yau. Universality of random matrices and local relaxation flow. *Invent. Math.* **185** (2011), no. 1, 75-119.
- 32) B. Nachtergaele, B. Schlein, R. Sims, S. Starr, and V. Zagrebnov. On the existence of the dynamics for anharmonic quantum oscillator systems. *Rev. Math. Phys.* **22** (2010), no. 2, 207–231.
- 33) C. Hainzl, E. Lenzmann, M. Lewin, and B. Schlein. On blowup for time-dependent generalized Hartree-Fock equations. *Ann. Henri Poincaré* **11** (2010), no. 6, 1023–1052.
- 34) B. Schlein. Derivation of effective evolution equations from many body quantum dynamics. *XVIth International Congress on Mathematical Physics*. World Sci. Publ., Hackensack, NJ, 2010, 406–416.
- 35) L. Erdős, B. Schlein, H.-T. Yau, J. Yin. The local relaxation flow approach to universality of the local statistics for random matrices. *Ann. Inst. H. Poincaré Probab. Statist.* **48** (2012), no. 1, 1–46.
- 36) J. Fröhlich, A. Pizzo, B. Schlein. Ionization of atoms by intense laser pulses. *Ann. Henri Poincaré* **11** (2010), no. 7, 1375-1407.

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- 39) A. Maltsev, B. Schlein. Average density of states for hermitian Wigner matrices. *Adv. Math.* **228** (2011), 2797-2836.
- 40) B. Schlein. Effective evolution equations from many body quantum dynamics. *Proceedings of “New Perspectives in Quantum Statistics and Correlations”*.
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- 42) A. Maltsev and B. Schlein. A Wegner Estimate for Wigner Matrices. *Entropy and the Quantum II*. Arizona School of Analysis with Applications. R. Sims, D. Ueltschi Editors, American Mathematical Society, 2011, 145-160.
- 43) B. Schlein. Effective evolution equations in quantum physics. *Journées équations aux dérivées partielles* (2011), Exp. No. 11. Available in electronic form at <http://jedp.cedram.org/jedp-bin/feuilleter>.
- 44) G. Ben Arous, K. Kirkpatrick, B. Schlein. A central limit theorem in many-body quantum dynamics. *Comm. Math. Phys.*, **321** (2013), 371-417.
- 45) C. Hainzl, B. Schlein. Dynamics of Bose-Einstein condensates of fermion pairs in the low density limit of BCS theory. *J. Funct. Anal.* **265** (2013), no. 3, 399-423.
- 46) C. Cacciapuoti, A. Maltsev, B. Schlein. Local Marchenko-Pastur law at the hard edge of sample covariance matrices. *J. Math. Phys.* **54** (2013), 043302.
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- 49) B. Schlein. Quantum dynamics, coherent states and Bogoliubov transformations. *XVII-th International Congress on Mathematical Physics*, World Sci. Publ., pages 197–216.

- 50) N. Benedikter, M. Porta, B. Schlein. Mean-field Evolution of Fermionic Systems. *Comm. Math. Phys.* **331** (2014), no. 3, 1087–1131.
- 51) M. Lewin, P. T. Nam, B. Schlein. Fluctuations around Hartree states in the mean-field regime. *Am. J. Math.* **137** (2015), no. 6, 1613–1650.
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- 53) C. Cacciapuoti, A. Maltsev, B. Schlein. Bounds on the Stieltjes transform of Wigner matrices. *Prob. Theory Rel. Fields.* **163** (2015), no. 1–2, 1–59.
- 54) N. Benedikter, M. Porta, B. Schlein. Mean-field dynamics of fermions with relativistic dispersion. *J. Math. Phys.* **55** (2014), no. 2, 021901.
- 55) R. Frank, B. Schlein. Dynamics of a strongly coupled polaron. *Lett. Math. Phys.* **104** (2014), no. 8, 911–929.
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- 61) C. Boccato, S. Cenatiempo, B. Schlein. Quantum many-body fluctuations around nonlinear Schrödinger dynamics. *Ann. Henri Poincaré* **18** (2017), 113.
- 62) J. Fröhlich, A. Knowles, B. Schlein, V. Sohinger. Gibbs measures of nonlinear Schrödinger equations as limits of many-body quantum states in dimensions $d \leq 3$. *Comm. Math. Phys.* **356** (2017), no. 3, 883–980.
- 63) M. Porta, S. Rademacher, C. Saffirio, B. Schlein. Mean field evolution of fermions with Coulomb interaction. *J. Stat. Phys.* **166** (2017), no. 6, 1345–1364.
- 64) C. Brennecke, B. Schlein. Gross-Pitaevskii dynamics for Bose-Einstein condensates. *Anal. PDE* **12** (2019), no. 6, 1513–1596.

- 65) C. Boccato, C. Brennecke, S. Cenatiempo, B. Schlein. Complete Bose-Einstein condensation in the Gross-Pitaevskii regime. *Comm. Math. Phys.* **359** (2018), no. 3, 975-1026.
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- 71) B. Schlein. Bogoliubov excitation spectrum for Bose-Einstein condensates. Proc. Int. Cong. of Math. - 2018. Rio de Janeiro, Vol. 2 (2655-2672).
- 72) N. Benedikter, P. T. Nam, M. Porta, B. Schlein, R. Seiringer. Optimal Upper Bound for the Correlation Energy of a Fermi Gas in the Mean-Field Regime. *Comm. Math. Phys.* **374** (2020), 2097-2150.
- 73) C. Boccato, C. Brennecke, S. Cenatiempo, B. Schlein. Optimal Rate for Bose-Einstein Condensation in the Gross-Pitaevskii Regime. *Comm. Math. Phys.* **376** (2020), 1311-1395.
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