

List of Publications

Dirk Hundertmark

I am the author and coauthor of 49 written publications, 43 of which are already printed or accepted for publication, and 6 are preprints. Furthermore, there are 7 manuscripts currently in the writing-up phase. Of the printed papers, my most important works are [7], [11], [20], [27], [29], [35], [36], and [37]. My personal favorites are [18], [29], [36], [37], [47], [48], and [49]. Close runners up are [10], [31], [35], [38], [42], and [43].

Manuscripts in Writing:

- 56 *Bound for quantum systems with long-range repulsion at the edge of their existence. Multipolarons*, with Michal Jex and Markus Lange
- 55 *Bound for quantum systems with long-range repulsion at the edge of their existence. Atoms*, with Michal Jex and Markus Lange
- 54 *Bounds for quantum systems with long-range repulsion at the edge of their existence. The one particle case*, with Michal Jex and Markus Lange
- 53 *Nonexistence of embedded states for NLS type equations*, with Silvana Avramaska-Lukarska.
- 52 *Fast versus ludicrous speed of decay of solitons in Fermi-Pasta-Ulam-Tsingou lattices*, with Silvana Avramaska-Lukarska.
- 51 *Existence of Dispersion Managed Solitons for arbitrary strong non-linearities: a Nehari--Manifold Approach*, with Young-Ran Lee, Tobias Ried, and Vadim Zharnitsky.
- 50 *Absence of positive eigenvalues for magnetic Schrödinger operators. A converse to Miller-Simon*., with Silvana Avramaska-Lukarska, and Hynek Kovaric.

Preprints:

- 49 *Cwikel's bound reloaded*, with Peer Kunstmann, Tobias Ried, Semjon Wugalter. [arXiv:1809.05069](https://arxiv.org/abs/1809.05069)
- 48 *The Lieb-Thirring inequality revisited*, with Rupert Frank, Michal Jex, and Phan Thành Nam. [arXiv:1808.09017](https://arxiv.org/abs/1808.09017)
- 47 *Knocking out teeth in one-dimensional periodic NLS*, with Leonid Chaichenets, Peer Kunstmann, and Nikolaos Pattakos. [arXiv:1808.03055](https://arxiv.org/abs/1808.03055)
- 46 *Nonlinear Schrödinger equation, differentiation by parts and modulation spaces*, with Leonid Chaichenets, Peer Kunstmann, and Nikolaos Pattakos. [arXiv:1802.10464](https://arxiv.org/abs/1802.10464)
- 45 *Quantitative bounds versus existence of weakly coupled bound states for Schrödinger type operators*, with Vu Hoang, Johanna Rochter, and Semjon Wugalter, 31 pp. [arXiv:1610.09891](https://arxiv.org/abs/1610.09891)
- 44 *Local well-posedness result for the cubic NLS on modulation spaces $M_{p,q}^s(\mathbb{R})$* , with Leonid Chaichenets, Peer Kunstmann, and Nikolaos Pattakos. 10 pp. [arXiv:1610.08298](https://arxiv.org/abs/1610.08298)

Published:

- 43 *Derivation of the Hartree equation for compound Bose gases in the mean field limit*, with Ioannos Anapolitanos and Michael Hott. Reviews in Mathematical Physics **29** (2017), no. 7, 1750022. <https://doi.org/10.1142/S0129055X17500222>
- 42 *Solitary waves in nonlocal NLS with dispersion averaged saturated nonlinearities*, with Young-Ran Lee, Tobias Ried, and Vadim Zharnitsky. Journal of Differential Equations, **265** (8), (2018), 3311–3338. <https://doi.org/10.1016/j.jde.2017.08.028>

- 41 *Dispersion managed solitons in the presence of saturated nonlinearity*, with Young-Ran Lee, Tobias Ried, and Vadim Zharnitsky. *Physica D: Nonlinear Phenomena*, **356–357**, (2017), 65–69. <https://doi.org/10.1016/j.physd.2017.06.004>
- 40 *Why do Solutions of the Maxwell-Boltzmann Equation Tend to be Gaussians? A Simple Answer*, with Young-Ran Lee. *Documenta Mathematica* **22** (2017), 1267–1273. <https://www.math.uni-bielefeld.de/documenta/vol-22/38.pdf>
- 39 *On the existence of global solutions of the one-dimensional NLS for initial data in the Modulation space $M_{p,q}(\mathbb{R})$* , with Leonid Chaichenets, Peer Kunstmann, and Nikolaos Pattakos. *Journal of Differential Equations* **263** (8), 4429–4441. <https://doi.org/10.1016/j.jde.2017.04.020>
- 38 *Discrete diffraction managed solitons: Threshold phenomena and rapid decay for general nonlinearities*, with Mi-Ran Choi and Young-Ran Lee, *Journal of Mathematical Physics* **58** (10), 101513–101543. <https://doi.org/10.1063/1.5004253>
- 37 *Smoothing properties of the homogeneous Boltzmann and Kac equations without cutoff for Debye-Yukawa-type potentials*, with Jean-Marie Barbaroux, Tobias Ried, and Semjon Wugalter. *Kinetic and Related Models (KRM)*, **10** (4), (2017), 901–924. <https://doi.org/10.3934/krm.2017036>
- 36 *Gevrey smoothing for weak solutions of the fully nonlinear homogeneous Boltzmann and Kac equations without cutoff for Maxwellian molecules*, with Jean-Marie Barbaroux, Tobias Ried, and Semjon Wugalter. *Archive for Rational Mechanics and Analysis* **225**, no. 2, (2017), 601–661, <https://doi.org/10.1007/s00205-017-1101-8>
- 35 *Thresholds for existence of dispersion managed solitons for general non-linearities*, with Mi-Ran Choi and Young-Ran Lee. *SIAM Journal on Mathematical Analysis* **49** (2017), no. 2, 1519–1569. <https://doi.org/10.1137/15M103666X>
- 34 *Exponential decay of dispersion management solitons for general dispersion profiles*, with William Green. *Letters in Mathematical Physics*, **106** (2016), no. 2, 221–249. <https://doi.org/10.1007/s11005-015-0811-9>
- 33 *Stability of dispersion managed solitons for vanishing average dispersion*, with Peer Kunstmann and Roland Schnaubelt. *Archiv der Mathematik*, **104** (2015), no. 3, 283–288. <https://doi.org/10.1007/s00013-015-0731-z>
- 32 *Analyticity of extremizers to the Airy-Strichartz inequality*, with Shuanglin Shao. *Bulletin of the London Mathematical Society* **44** (2012), no. 2, 336–352.
- 31 *On non-local variational problems with lack of compactness related to non-linear optics*, with Young-Ran Lee. *Journal of Nonlinear Science* **22** (2012), no. 1, 1–38.
- 30 *Super-exponential decay of diffraction managed solitons*, with Young-Ran Lee. *Communications in Mathematical Physics* **309** (2012), no. 1, 1–21. <https://doi.org/10.1007/s00220-011-1354-2>
- 29 *Exponential decay of dispersion management solitons*, with Burak Erdogan and Young-Ran Lee. *Mathematical Research Letters* **18** (2011), no. 1, 11–24. DOI: <http://dx.doi.org/10.4310/MRL.2011.v18.n1.a2>
- 28 *Heat-flow monotonicity of Strichartz norms*, with Jonathan Bennett, Neal Bez, and Anthony Carbery. *Analysis & PDE* **2** (2009), no. 2, 147–158. [10.2140/apde.2009.2.147](https://doi.org/10.2140/apde.2009.2.147)
- 27 *Decay estimates and smoothness for solutions of the dispersion managed non-linear Schrödinger equation*, with Young-Ran Lee. *Comm. Math. Phys.* **286** (2009), no. 3, 851–873. <https://doi.org/10.1007/s00220-008-0612-4>

- 26 *A unified theoretical framework for fluctuating-charge models in atom-space and in bond-space*, with Jiahao Chen and Todd Martinez, 44pp. *The Journal of Chemical Physics* **129**, 214113 (2008); <https://doi.org/10.1063/1.3021400>
- 25 *Improved Hardy-Sobolev inequalities*, with Alex Balinsky, Des Evans, and Roger Lewis. *Banach Journal of Mathematical Analysis* **2** (2008), no. 2, 94–106. https://www.emis.de/journals/BJMA/tex_v2_n2_a11.pdf
- 24 *A short introduction to Anderson localization*. In *Proceedings of the LMS Meeting on Analysis and Stochastics of Growth Processes*, Bath, September 2006, 25 pp. <https://dx.doi.org/10.1093/acprof:oso/9780199239252.003.0009>
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- 22 *Exponential decay of eigenfunctions and generalized eigenfunction of non self-adjoint matrix Schrödinger operators related to NLS*, with Young-Ran Lee. *Bulletin of the London Mathematical Society* **39** (2007), no. 5, 709–720. <https://doi.org/10.1112/blms/bdm065>
- 21 *Bound state problems in Quantum Mechanics*, In *Spectral theory and mathematical physics: a Festschrift in honor of Barry Simon's 60th birthday*, pp. 463–496. *Proceedings of Symposia in Pure Mathematics* **76**, Part 1, American Mathematical Society, Providence, RI, 2007. <https://doi.org/10.1090/pspum/076.1>
- 20 *On sharp Strichartz inequalities in low dimensions*, with Vadim Zharnitsky. *International Mathematical Research Notices*, Volume 2006 (2006), Article ID 34080. <https://doi.org/10.1155/IMRN/2006/34080>
- 19 *Bounds on the spectral shift function and the density of states*, with Rowan Killip, Shu Nakamura, Peter Stollmann, and Ivan Veselić. *Communications in Mathematical Physics* **262** (2006), no. 2, 489–503. <https://doi.org/10.1007/s00220-005-1460-0>
- 18 *A diamagnetic inequality for semigroup differences*, with Barry Simon. *Crelle Journal für die reine und angewandte Mathematik (Journal of Pure and Applied Mathematics)* **571** (2004), 107–130. <https://doi.org/10.1515/crll.2004.036>
- 17 *Reflection symmetries and absence of eigenvalues for one-dimensional Schrödinger operators*, with David Damanik. *Proceedings of the American Mathematical Society* **132** (2004), no. 7, 1957–1962. <https://doi.org/10.1090/S0002-9939-04-06985-0>
- 16 *Classical magnetic Lifshits tails in three space dimensions: impurity potentials with slow anisotropic decay*, with Werner Kirsch and Simone Warzel. *Markov Processes and Related Fields* **9** (2003), no. 4, 651–660.
- 15 *Bound states and the Szegő condition for Jacobi matrices and Schrödinger operators*, with David Damanik and Barry Simon. *Journal of Functional Analysis* **205** (2003), no. 2, 357–379. [https://doi.org/10.1016/S0022-1236\(03\)00070-3](https://doi.org/10.1016/S0022-1236(03)00070-3)
- 14 *Variational estimates for discrete Schrödinger operators with potentials of indefinite sign*, with David Damanik, Rowan Killip, and Barry Simon. *Communications in Mathematical Physics* **238** (2003), 545–562. <https://doi.org/10.1007/s00220-003-0868-7>
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- 12 *An optimal L^p -bound on the Krein spectral shift function*, with Barry Simon. *Journal d'Analyse Mathématique* **87** (2002), 199–208. <https://doi.org/10.1007/BF02868474>
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- 5 *On the time-dependent approach to Anderson localization*. *Mathematische Nachrichten* **214** (2000), 25–38.
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- 3 *A sharp bound for an eigenvalue moment of the one-dimensional Schrödinger operator*. with Elliott H. Lieb and Lawrence E. Thomas. *Adv. Theor. Math. Phys.* **2**, no. 4 (1998), 719–731. <http://dx.doi.org/10.4310/ATMP.1998.v2.n4.a2>
- 2 *The fate of Lifshitz tails in magnetic fields*, with Kurt Broderix, Werner Kirsch, and Hajo Leschke. *Journal of Statistical Physics* **80** (1995), 1–22. <https://doi.org/10.1007/BF02178350>
- 1 *Self averaging, decomposition, and asymptotic properties of the density of states for random Schrödinger operators with constant magnetic field*, with Kurt Broderix and Hajo Leschke. In “*Path Integrals from meV to MeV*”, Tutzing 1992, eds. H. Grabert, A. Inomata, and U. Weiss. World Scientific, Singapore (1993). <https://doi.org/10.1142/9789814535403>