List of Publications

Wojciech Dybalski (AMU Poznań)

1 Publications in peer reviewed journals

1. P. Duch, W. Dybalski, and A. Jahandideh. *Stochastic quantization of two-dimensional $P(\Phi)$ quantum field theory*. Ann. Henri Poincaré **26**, 1055–1086 (2025). https://doi.org/10.1007/s00023-024-01447-w

2. W. Dybalski. *Exact Schwinger functions for a class of bounded interactions in $d \geq 2$*. To appear in Commun. Math. Phys. (2025). https://arxiv.org/abs/2502.07546

3. W. Dybalski, A. Stottmeister, and Y. Tanimoto. *The Bałaban variational problem in the non-linear sigma model*. Rev. Math. Phys., Online Ready (2024). https://doi.org/10.1142/s0129055x24610038

4. W. Dybalski, A. Stottmeister, and Y. Tanimoto. *Lattice Green functions for pedestrians: Exponential decay*. Rev. Math. Phys. **36**, 2430005 (2024). https://doi.org/10.1142/s0129055x2430005x

5. B. Biadasiewicz and W. Dybalski. *Quantum phase transition of infrared radiation*. JHEP **04** (2025) 140. https://doi.org/10.1007/JHEP04(2025)140

6. V. Beaud, W. Dybalski, and G. M. Graf. *Infraparticle states in the massless Nelson model: Revisited*. Ann. Henri Poincaré **25**, 173–212 (2024). https://doi.org/10.1007/s00023-022-01261-2

7. M. Duell and W. Dybalski. *Asymptotic Completeness in a Class of Massive Wedge-Local Quantum Field Theories in any Dimension*. Commun. Math. Phys. **401**, 2355–2390 (2023). https://doi.org/10.1007/s00220-023-04690-0

8. B. Biadasiewicz and W. Dybalski. *Local normality of infravacua and relative normalizers for relativistic systems*. Letters in Mathematical Physics **112**, 40 (2022). https://doi.org/10.1007/s11005-022-01532-3

9. W. Dybalski and J. Mund. *Interacting massless infraparticles in 1+1 dimensions*. Commun. Math. Phys. **395**, 1197–1210 (2022). https://doi.org/10.1007/s00220-022-04451-5

10. W. Dybalski and A. Pizzo. *Coulomb scattering in the massless Nelson model IV. Atom-electron scattering*. Rev. Math. Phys. **34**, 2250014 (2022). https://doi.org/10.1142/s0129055x22500143

11. W. Dybalski and V. Morinelli. *The Bisognano-Wichmann property for asymptotically complete massless QFT*. Commun. Math. Phys. **380**, 1267–1294 (2020). https://doi.org/10.1007/s00220-020-03755-8

12. W. Dybalski and H. Spohn. *Effective mass of the polaron – revisited*. Ann. Henri Poincaré **21**, 1573–1594 (2020). https://doi.org/10.1007/s00023-020-00892-7

13. D. Cadamuro and W. Dybalski. *Curing velocity superselection in non-relativistic QED by restriction to a lightcone*. Ann. Henri Poincaré **21**, 2877–2896 (2020). https://doi.org/10.1007/s00023-020-00932-2.

14. W. Dybalski and B. Wegener. *Asymptotic charges, large gauge transformations and inequivalence of different gauges in external current QED*. JHEP **11** (2019) 126. https://doi.org/10.1007/JHEP11(2019)126

15. W. Dybalski and Duc Viet Hoang. *A soft-photon theorem for the Maxwell-Lorentz system*. J. Math. Phys. **60**, 102903 (2019). https://doi.org/10.1063/1.5123592

16. D. Cadamuro and W. Dybalski. *Relative normalizers of automorphism groups, infravacua and the problem of velocity superselection in QED*. Commun. Math. Phys. **372**, 769–796 (2019). https://doi.org/10.1007/s00220-019-03479-4

17. W. Dybalski and M. Wrochna. *A mechanism for holography for non-interacting fields on Anti-de Sitter spacetimes*. Class. Quant. Grav. **36**, 085006 (2019). https://doi.org/10.1088/1361-6382/ab0cb1

18. W. Dybalski and A. Pizzo. *Coulomb scattering in the massless Nelson model III. Ground state wave functions and non-commutative recurrence relations*. Ann. Henri Poincaré **19**, 463–514 (2018). https://doi.org/10.1007/s00023-017-0642-6

19. W. Dybalski and A. Pizzo. *Coulomb scattering in the massless Nelson model II. Regularity of ground states*. Rev. Math. Phys. **31**, 1950010 (2018). https://doi.org/10.1142/s0129055x19500107

20. W. Dybalski. *Asymptotic observables in gapped quantum spin systems*. Commun. Math. Phys. **357**, 231–248 (2018). https://doi.org/10.1007/s00220-017-2954-2

21. W. Dybalski. *From Faddeev-Kulish to LSZ. Towards a non-perturbative description of colliding electrons*. Nuclear Physics B **925**, 455–469 (2017). https://doi.org/10.1016/j.nuclphysb.2017.10.018

22. S. Alazzawi and W. Dybalski. *Compton scattering in the Buchholz-Roberts framework of relativistic QED*. Lett. Math. Phys. **107**, 81–106 (2017). https://doi.org/10.1007/s11005-016-0889-8

23. S. Bachmann, W. Dybalski and P. Naaijkens. *Lieb-Robinson bounds, Arveson spectrum and Haag-Ruelle scattering theory for gapped quantum spin systems*. Ann. Henri Poincaré **17**, 1737–1791 (2016). **AHP Prize 2016**. https://doi.org/10.1007/s00023-015-0440-y

24. W. Dybalski and J.S. Møller. *The translation invariant massive Nelson model III. Asymptotic completeness below the two-boson threshold*. Ann. Henri Poincaré **16**, 2603–2693 (2015). https://doi.org/10.1007/s00023-014-0384-7

25. W. Dybalski and A. Pizzo. *Coulomb scattering in the massless Nelson model I. Foundations of two-electron scattering*. J. Stat. Phys. **154**, 543–587 (2014). https://doi.org/10.1007/s10955-013-0857-y

26. W. Dybalski and C. Gérard. *A criterion for asymptotic completeness in local relativistic QFT*. Commun. Math. Phys. **332**, 1167–1202 (2014). https://doi.org/10.1007/s00220-014-2069-y

27. W. Dybalski and C. Gérard. *Towards asymptotic completeness of two-particle scattering in local relativistic QFT*. Commun. Math. Phys. **326**, 81–109 (2014). https://doi.org/10.1007/s00220-013-1831-x

28. W. Dybalski and Y. Tanimoto. *Asymptotic completeness for infraparticles in two-dimensional conformal field theory*. Lett. Math. Phys. **103**, 1223–1241 (2013). https://doi.org/10.1007/s11005-013-0638-1

29. W. Dybalski and Y. Tanimoto. *Infraparticles with superselected direction of motion in two-dimensional conformal field theory*. Commun. Math. Phys. **311**, 457–490 (2012). https://doi.org/10.1007/s00220-012-1450-y

30. W. Dybalski. *Towards a construction of inclusive collision cross-sections in the massless Nelson model*. Ann. Henri Poincaré **13**, 1427–1449 (2012). https://doi.org/10.1007/s00023-011-0156-6

31. W. Dybalski and Y. Tanimoto. *Asymptotic completeness in a class of massless relativistic quantum field theories*. Commun. Math. Phys. **305**, 427–440 (2011). https://doi.org/10.1007/s00220-010-1173-x

32. W. Dybalski. *Continuous spectrum of automorphism groups and the infraparticle problem*. Commun. Math. Phys. **300**, 273–299 (2010). https://doi.org/10.1007/s00220-010-1091-y

33. W. Dybalski. *Coincidence arrangements of local observables and uniqueness of the vacuum in QFT*. J. Phys. A **42**, 365201–365223 (2009). https://iopscience.iop.org/article/10.1088/1751-8113/42/36/365201/meta

34. W. Dybalski. *A sharpened nuclearity condition for massless fields*. Lett. Math. Phys. **84**, 217–230 (2008). https://doi.org/10.1007/s11005-008-0244-9

35. W. Dybalski. *A sharpened nuclearity condition and the uniqueness of the vacuum in QFT*. Commun. Math. Phys. **283**, 523–542 (2008). https://doi.org/10.1007/s00220-008-0514-5

36. R.M. Abolfach, W. Dybalski and P. Hawrylak. *Theory of a two-level artificial molecule in laterally coupled quantum Hall droplets*. Phys. Rev. B **73**, 075314–075319 (2006). https://doi.org/10.1103/PhysRevB.73.075314

37. W. Dybalski and P. Hawrylak. *Two electrons in a strongly coupled double quantum dot: from an artificial helium atom to a hydrogen molecule*. Phys. Rev. B **72**, 205432–205441 (2005). https://doi.org/10.1103/PhysRevB.72.205432

38. W. Dybalski. *Haag-Ruelle scattering theory in presence of massless particles*. Lett. Math. Phys. **72**, 27–38 (2005). https://doi.org/10.1007/s11005-005-2294-6

2 Other publications

1. W. Dybalski. *Asymptotic observables, propagation estimates and the problem of asymptotic completeness in algebraic QFT*. In: P. Exner, W. König, and H. Neidhardt (eds.), *Mathematical Results in Quantum Mechanics*, World Scientific (2014). https://www.worldscientific.com/doi/abs/10.1142/9250

2. D. Buchholz and W. Dybalski. *Scattering in Relativistic Quantum Field Theory: Basic Concepts, Tools, and Results*. In: Encyclopedia of Mathematical Physics (Second Edition) **5**, 489–498 (2025). https://doi.org/10.1016/b978-0-323-95703-8.00092-6

3. P. Duch and W. Dybalski. *Infrared problem in Quantum Electrodynamics*. In: Encyclopedia of Mathematical Physics (Second Edition) **5**, 304–316 (2025). https://doi.org/10.1016/b978-0-323-95703-8.00082-3

3 Theses

1. *Scattering theory for quantum systems with infinitely many degrees of freedom*. Habilitation, Technical University of Munich, (2019). Advisors: C. Fewster, H. Spohn and S. Warzel.

2. *Spectral theory of automorphism groups and particle structures in quantum field theory*. PhD Thesis, University of Göttingen, (2009). Advisor: D. Buchholz.

3. *Scattering of particles in quantum field theory*. MSc Thesis, University of Warsaw, (2003). Advisor: J. Dereziński.