Research output list

If not specifically indicated otherwise, the following research list is in alphabetical order. In all subsequent research output, I contributed at the level of first or second author, conducted the computations, (co-)led the writing, and developed the main ideas of the project.

Journal articles

- [26] M. Lewicki, M. Merchand, L. Sagunski, <u>P. Schicho</u>, and D. Schmitt, *Impact of the-oretical uncertainties on model parameter reconstruction from GW signals sourced by cosmological phase transitions*, (2024), [2403.03769].
- [25] J. Ghiglieri, <u>P. Schicho</u>, N. Schlusser, and E. Weitz, *The force-force correlator at the hard thermal scale of hot QCD*, (2023), [2312.11731].
- [24] C. Lwowski, K. Kaiser, J. Bucur, <u>P. Schicho</u>, and T. Kohnen, Accuracy of using the axial length of the fellow eye for IOL calculation in retinal detachment eyes undergoing silicone oil removal, Br. J. Ophthalmology (2023) 10.1136/bjo-2023-323581.
- [23] J. Österman, <u>P. Schicho</u>, and A. Vuorinen, *Integrating by parts at finite density*, JHEP **08**, 212 (2023), [2304.05427].
- [22] L. Sagunski, <u>P. Schicho</u>, and D. Schmitt, Supercool exit: Gravitational waves from QCD-triggered conformal symmetry breaking, Phys. Rev. D 107, 123512 (2023), [2303.02450].
- [21] A. Ekstedt, <u>P. Schicho</u>, and T. V. I. Tenkanen, <u>DRalgo</u>: A package for effective field theory approach for thermal phase transitions, Comput. Phys. Commun. <u>288</u>, 108725 (2023), [2205.08815].
- [20] T. Gorda, A. Kurkela, J. Österman, R. Paatelainen, S. Säppi, P. Schicho, K. Seppänen, and A. Vuorinen, Degenerate fermionic matter at N3LO: Quantum electrodynamics, Phys. Rev. D 107, L031501 (2023), [2204.11893].
- [19] T. Gorda, A. Kurkela, J. Österman, R. Paatelainen, S. Säppi, **P. Schicho**, K. Seppänen, and A. Vuorinen, Soft photon propagation in a hot and dense medium to next-to-leading order, Phys. Rev. D 107, 036012 (2023), [2204.11279].
- [18] J. Löfgren, M. J. Ramsey-Musolf, <u>P. Schicho</u>, and T. V. I. Tenkanen, *Nucleation at Finite Temperature: A Gauge-Invariant Perturbative Framework*, Phys. Rev. Lett. 130, 251801 (2023), [2112.05472].
- [17] P. Schicho, T. V. I. Tenkanen, and G. White, Combining thermal resummation and gauge invariance for electroweak phase transition, JHEP 11, 047 (2022), [2203.04284].
- [16] S. Biondini, P. Schicho, and T. V. I. Tenkanen, Strong electroweak phase transition in t-channel simplified dark matter models, JCAP 10, 044 (2022), [2207.12207].

- [15] J. Hirvonen, J. Löfgren, M. J. Ramsey-Musolf, <u>P. Schicho</u>, and T. V. I. Tenkanen, Computing the gauge-invariant bubble nucleation rate in finite temperature effective field theory, JHEP 07, 135 (2022), [2112.08912].
- [14] J. Ghiglieri, G. D. Moore, <u>P. Schicho</u>, and N. Schlusser, *The force-force-correlator in hot QCD perturbatively and from the lattice*, JHEP **02**, 58 (2022), [2112.01407].
- [13] L. Niemi, <u>P. Schicho</u>, and T. V. I. Tenkanen, Singlet-assisted electroweak phase transition at two loops, Phys. Rev. D 103, 115035 (2021), [2103.07467].
- [12] D. Croon, O. Gould, <u>P. Schicho</u>, T. V. I. Tenkanen, and G. White, *Theoretical uncertainties for cosmological first-order phase transitions*, JHEP **04**, 055 (2021), [2009.10080].
- [11] P. M. Schicho, T. V. I. Tenkanen, and J. Österman, Robust approach to thermal resummation: Standard Model meets a singlet, JHEP 06, 130 (2021), [2102.11145].
- [10] M. Laine, <u>P. Schicho</u>, and Y. Schröder, A QCD Debye mass in a broad temperature range, Phys. Rev. D 101, 023532 (2020), [1911.09123].
- [9] M. Laine, <u>P. Schicho</u>, and Y. Schröder, Soft thermal contributions to 3-loop gauge coupling, JHEP 2018, 37 (2018), [1803.08689].

Conference proceedings

- [8] J. Ghiglieri, G. D. Moore, <u>P. Schicho</u>, N. Schlusser, and E. Weitz. Hard parton dispersion in the quark-gluon plasma, non-perturbatively. In 11th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions (July 2023). [2307.09297].
- [7] G. Aarts, J. Aichelin, C. Allton, A. Athenodorou, D. Bachtis, C. Bonanno, N. Brambilla, E. Bratkovskaya, M. Bruno, M. Caselle, C. Conti, R. Contino, L. Cosmai, F. Cuteri, L. Del Debbio, M. D'Elia, P. Dimopoulos, F. Di Renzo, T. Galatyuk, J. N. Guenther, R. Houtz, F. Karsch, A. Y. Kotov, M. P. Lombardo, B. Lucini, L. Maio, M. Panero, J. M. Pawlowski, A. Pelissetto, O. Philipsen, A. Rago, C. Ratti, S. M. Ryan, F. Sannino, C. Sasaki, P. Schicho, C. Schmidt, S. Sharma, O. Soloveva, M. Sorba, and U.-J. Wiese. Phase Transitions in Particle Physics Results and Perspectives from Lattice Quantum Chromo-Dynamics. In (Jan. 2023). [2301.04382].
- [6] M. Fraser, D. Björkman, K. Cornelis, B. Goddard, V. Kain, <u>P. Schicho</u>, C. Theis, and H. Vincke. Modelling the Radioactivity Induced by Slow-Extraction Losses in the CERN SPS. In Proc. of International Particle Accelerator Conference (IPAC'17) (May 2017), 1897–1900.

[5] M. A. Fraser, R. G. Alia, B. Balhan, H. Bartosik, C. Bertone, D. Björkman, J. Borburgh, N. Conan, K. Cornelis, L. Gatignon, B. Goddard, Y. Kadi, V. Kain, A. Mereghetti, F. Roncarolo, P. M. Schicho, J. Spanggaard, O. Stein, L. Stoel, F. M. Velotti, and H. Vincke. SPS Slow Extraction Losses and Activation: Challenges and Possibilities for Improvement. In Proc. of International Particle Accelerator Conference (IPAC'17) (Copenhagen. 2017), 611–614.

Theses

- [4] P. M. Schicho, Multi-loop investigations of strong interactions at high temperatures, PhD thesis (U. Bern, 2020).
- [3] P. M. Schicho, Inhomogeneous condensation in quark-based QCD effective models via wavelet pseudoparticles, MA thesis (ETH Zürich, 2016).
- [2] <u>P. Schicho</u>, π and ρ -Meson mass spectroscopy from Lattice QCD, BA thesis (TU Graz, 2014).
- [1] P. Schicho, Increasing the sensitivity of a search for supersymmetry in the single lepton channel with the Stransverse Mass, Project thesis (HEPHY Vienna, 2014).

Invited talks at workshops

- 19/03/2024 Strong cosmological phase transitions through the EFT lens, invited **planary** talk at Quarkonia meet Dark Matter at Institute for Advanced Study, Technical University of Munich, Germany
- 05/12/2022 EFT framework for (precision) cosmological phase transition thermodynamics, invited planary talk at What the heck happens when the Universe boils? at Kavli IPMU, Tokyo, Japan

Contributed talks

- 14/09/2023 Phase transition thermodynamic parameters at high precision, contributed talk at 26th International Conference on Particle Physics and Cosmology (COSMO'23), Madrid, Spain
- 11/07/2023 Degenerate fermionic matter at N^3LO , contributed talk at ELEMENTS Annual Conference, Bad Nauheim, Germany
- 03/07/2023 Can EFT reveal if there was an electroweak phase transition?, contributed talk at Cosmology from Home
- 22/06/2023 PRECLISA. Gravitational waves from cosmological phase transitions: Precision cosmology in the light of LISA, interview talk for the Ambizione grant of the Swiss National Science Foundation, Bern, Switzerland

- 17/05/2023 Phase transition thermodynamic parameters at high precision, contributed talk at How fast does the bubble grow?, DESY, Hamburg, Germany
- 05/05/2023 Strong electroweak phase transition and simplified dark matter models, contributed talk at Progress on Old and New Themes in cosmology (PONT) 2023, Avignon, France
- 20/06/2022 Jet dispersion in hot QCD from the lattice, contributed talk at SEWM 2022, Paris, France
- 06/04/2022 (Non-)perturbative jet dispersion hot QCD, contributed talk at Quark Matter 2022, Kraków, Poland
- 30/03/2022 (Non-)perturbative jet dispersion hot QCD, contributed talk at Mini workshop: Phase transitions in particle physics, Galileo Galilei Institute, Firenze, Italy
- 29/03/2021 Soft thermal contributions to 3-loop gauge coupling, contributed parallel talk at Fun-QCD (online), Barcelona, Spain
- 28/06/2018 Fun with thermal dimension-six operators, contributed parallel talk at SEWM 2018, Barcelona, Spain

Seminar talks

- 23/11/2023 Impact of computational diligence on GW signals from phase transitions, invited seminar talk at Warsaw University, Poland
- 12/10/2023 Impact of computational diligence on GW signals from phase transitions, invited seminar talk at University of Basel, Switzerland
- 19/09/2023 Impact of computational diligence on GW signals from phase transitions, invited seminar talk at Helsinki Institute of Physics, Helsinki, Finland
- 15/06/2023 Electroweak phase diagram at finite lepton number density, contributed talk at Thermal Field Theory meets Phenomenology, Uppsala, Sweden
- 30/05/2023 High-temperature effective field theories: Precision phase transition thermodynamics, seminar talk at HEP seminar, Université de Genève, Switzerland
- 10/05/2023 Integrating by parts at finite density, informal talk at the DMGW meeting, Goethe University, Frankfurt, Germany
- 25/01/2023 Degenerate fermionic matter at N^3LO , invited seminar talk at Gravitation and Cosmology seminar, Utrecht University, Netherlands
- 24/01/2023 What can EFT tell us about the electroweak phase transition?, seminar talk at CRC-TR211 meeting and Colloquium, Bielefeld University, Germany
- 08/11/2022 EFT framework for cosmological phase transition thermodynamics, seminar talk at the AstroCoffee, Goethe University, Frankfurt, Germany

- 13/10/2022 Degenerate fermionic matter at N^3LO , invited seminar talk (online) at S@INT seminar, INT, Seattle, USA
- 15/09/2022 (Gauge independent) Bubble nucleation rate at finite temperature, invited seminar talk at Jožef Stefan Institute, Ljubljana, Slovenia
- 24/08/2022 Can EFT tell us if there was an electroweak phase transition?, invited seminar talk at University of Graz, Graz, Austria
- 11/07/2022 Soft light-cone observables from electrostatic QCD, invited seminar talk (online) at the QCD theory seminar
- 07/07/2022 Degenerate fermionic matter at N^3LO , invited seminar talk at the Nuclear Physics Colloquium, Goethe University, Frankfurt, Germany
- 16/06/2022 Can EFT tell us if there was an electroweak phase transition?, invited seminar talk at SUBATECH, Nantes, France
- 31/05/2022 Electroweak phase transition: Combining thermal resummation and gauge invariance, invited seminar talk at NICPB, Tallinn University, Estonia
- 24/05/2022 Combining thermal resummation and gauge invariance for electroweak phase transition, invited seminar talk (online) at School of Physics and Astronomy, Monash University, Australia
- 03/03/2022 Effective theory approach to cosmological phase transitions, invited seminar talk at Instituto de Astrofísica de Canarias, La Laguna, Spain
- 28/10/2021 Gauge independent bubble nucleation rate at finite temperature, invited seminar talk at University of Basel, Basel, Switzerland
- 19/10/2021 Cosmological phase transition: Robust thermal resummation, invited seminar talk at University of Bern, Bern, Switzerland
- 13/05/2021 Cosmological phase transition: Robust thermal resummation, invited seminar talk (online) at KIAS, Seoul, South Korea
- 25/11/2020 How to be precise at the electroweak scale at finite-temperature, invited seminar talk (online) at Kavli IPMU, Tokyo, Japan
- 13/08/2019 3-Loop Gauge Coupling in Hot Yang-Mills, invited seminar talk at Helsinki Institute of Physics, Helsinki, Finland
- 28/08/2018 Fun with thermal dimension-six operators, invited seminar talk at Universidad del Bío-Bío, Chillán, Chile