LIST OF PUBLICATIONS

REFEREED FULL PAPERS

- [1] M. Gross, J. Engel, J. Good, H. Huck, I. Isaev, G. Koss, M. Krasilnikov, O. Lishilin, G. Loisch, Y. Renier, T. Rublack, F. Stephan, R. Brinkmann, A. Martinez de la Ossa, J. Osterhoff, D. Malyutin, D. Richter, T. Mehrling, M. Khojoyan, C. B. Schroeder, and F. Grüner. *Observation of the Self-Modulation Instability via Time-Resolved Measurements*. **Phys. Rev. Lett.**, 120:144802, Apr 2018. URL https://link.aps.org/doi/10.1103/PhysRevLett.120.144802.
- [2] A. Aschikhin, T. J. Mehrling, A. Martinez de la Ossa, and J. Osterhoff. Analytical model for the uncorrelated emittance evolution of externally injected beams in plasma-based accelerators. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, pages –, 2018. URL https://www.sciencedirect.com/science/article/pii/S0168900218302195.
- [3] V. Libov, A. Aschikhin, J. Dale, R. DArcy, K. Ludwig, A. Martinez de la Ossa, T. Mehrling, J.-H. Roeckemann, L. Schaper, B. Schmidt, S. Schröder, S. Wesch, J. Zemella, and J. Osterhoff. FLASHForward X-2: Towards beam quality preservation in a plasma booster. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, pages –, 2018. URL https://www.sciencedirect.com/science/article/pii/S0168900218302171.
- [4] T. J. Mehrling, C. Benedetti, C. B. Schroeder, A. M. de la Ossa, J. Osterhoff, E. Esarey, and W. P. Leemans. *Accurate modeling of the hose instability in plasma wakefield accelerators*. **Physics of Plasmas**, 25(5):056703, 2018. URL https://doi.org/10.1063/1.5017960.
- [5] A. Martinez de la Ossa, Z. Hu, M. J. V. Streeter, T. J. Mehrling, O. Kononenko, B. Sheeran, and J. Osterhoff. Optimizing density down-ramp injection for beam-driven plasma wakefield accelerators. Phys. Rev. Accel. Beams, 20:091301, Sep 2017. URL https://link.aps.org/doi/10.1103/ PhysRevAccelBeams.20.091301.
- [6] R. Brinkmann, N. Delbos, I. Dornmair, M. Kirchen, R. Assmann, C. Behrens, K. Floettmann, J. Grebenyuk, M. Gross, S. Jalas, T. Mehrling, A. Martinez de la Ossa, J. Osterhoff, B. Schmidt, V. Wacker, and A. R. Maier. Chirp Mitigation of Plasma-Accelerated Beams by a Modulated Plasma Density. Phys. Rev. Lett., 118:214801, May 2017. URL https://link.aps.org/doi/10.1103/PhysRevLett.118.214801.
- [7] T. J. Mehrling, R. A. Fonseca, A. Martinez de la Ossa, and J. Vieira. *Mitigation of the Hose Instability in Plasma-Wakefield Accelerators*. **Phys. Rev. Lett.**, 118:174801, Apr 2017. URL https://link.aps.org/doi/10.1103/PhysRevLett.118.174801. Citing Articles without self-citations: 3 (WoS Apr 2018).
- [8] R. E. Robson, T. J. Mehrling, and J. Osterhoff. *Great moments in kinetic theory: 150 years of Maxwells (other) equations.* European Journal of Physics, 38(6):065103, 2017. URL http://stacks.iop.org/0143-0807/38/i=6/a=065103.
- [9] O. Lishilin, M. Gross, R. Brinkmann, J. Engel, F. Grüner, G. Koss, M. Krasilnikov, A. Martinez de la Ossa, T. Mehrling, J. Osterhoff, G. Pathak, S. Philipp, Y. Renier, D. Richter, C. Schroeder, R. Schütze, and F. Stephan. First results of the plasma wakefield acceleration experiment at PITZ. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 829:37 42, September 2016. URL http://www.sciencedirect.com/science/article/pii/S0168900216000085. Citing Articles without self-citations: o (WoS Nov 2017).

[10] T. Mehrling, R. Robson, J.-H. Erbe, and J. Osterhoff. Efficient numerical modelling of the emittance evolution of beams with finite energy spread in plasma wakefield accelerators. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 829:367 – 371, September 2016. URL http://www.sciencedirect.com/science/article/pii/S0168900216001418. Citing Articles without self-citations: o (WoS - Nov 2017).

- [11] A. Aschikhin, C. Behrens, S. Bohlen, J. Dale, N. Delbos, L. di Lucchio, E. Elsen, J.-H. Erbe, M. Felber, B. Foster, L. Goldberg, J. Grebenyuk, J.-N. Gruse, B. Hidding, Z. Hu, S. Karstensen, A. Knetsch, O. Kononenko, V. Libov, K. Ludwig, A. Maier, A. Martinez de la Ossa, T. Mehrling, C. Palmer, F. Pannek, L. Schaper, H. Schlarb, B. Schmidt, S. Schreiber, J.-P. Schwinkendorf, H. Steel, M. Streeter, G. Tauscher, V. Wacker, S. Weichert, S. Wunderlich, J. Zemella, and J. Osterhoff. The FLASHForward facility at DESY. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 806:175 183, January 2016. URL http://www.sciencedirect.com/science/article/pii/S0168900215012103. Citing Articles without self-citations: 5 (WoS-Nov 2017).
- [12] A. Martinez de la Ossa, T. J. Mehrling, L. Schaper, M. J. V. Streeter, and J. Osterhoff. Wakefield-induced ionization injection in beam-driven plasma accelerators. Physics of Plasmas, 22(9):–, September 2015. URL http://scitation.aip.org/content/aip/journal/pop/22/9/10.1063/1.4929921. Citing Articles without self-citations: 4 (WoS Nov 2017).
- [13] R. Robson, T. Mehrling, and J. Osterhoff. *Phase-space moment-equation model of highly relativi*stic electron-beams in plasma-wakefield accelerators. **Annals of Physics**, 356(0):306 – 319, May 2015. URL http://www.sciencedirect.com/science/article/pii/S0003491615000998. Citing Articles without self-citations: 2 (WoS - Nov 2017).
- [14] T. Mehrling, C. Benedetti, C. B. Schroeder, and J. Osterhoff. *HiPACE: a quasi-static particle-in-cell code*. Plasma Physics and Controlled Fusion, 56(8):084012, July 2014. URL http://stacks.iop.org/0741-3335/56/i=8/a=084012. Citing Articles without self-citations: 10 (WoS Nov 2017).
- [15] J. Grebenyuk, A. Martinez de la Ossa, T. Mehrling, and J. Osterhoff. Beam-driven plasma-based acceleration of electrons with density down-ramp injection at FLASHForward. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 740(0):246 249, March 2014. URL http://www.sciencedirect.com/science/article/pii/S0168900213014356. Citing Articles without self-citations: 6 (WoS Nov 2017).
- [16] A. Martinez de la Ossa, C. Behrens, J. Grebenyuk, T. Mehrling, L. Schaper, and J. Osterhoff. High-quality electron beams from field-induced ionization injection in the strong blow-out regime of beam-driven plasma accelerators. Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 740(0):231 235, March 2014. URL http://www.sciencedirect.com/science/article/pii/S016890021301334X. Citing Articles without self-citations: 1 (WoS Nov 2017).
- [17] A. Martinez de la Ossa, J. Grebenyuk, <u>T. Mehrling</u>, L. Schaper, and J. Osterhoff. *High-Quality Electron Beams from Beam-Driven Plasma Accelerators by Wakefield-Induced Ionization Injection*. **Phys. Rev. Lett.**, 111:245003, December 2013. URL http://link.aps.org/doi/10.1103/PhysRevLett.111.245003. Citing Articles without self-citations: 15 (WoS Nov 2017).
- [18] T. Mehrling, J. Grebenyuk, F. S. Tsung, K. Floettmann, and J. Osterhoff. *Transverse emittance growth in staged laser-wakefield acceleration*. **Phys. Rev. ST Accel. Beams**, 15:111303, November

2012. URL http://link.aps.org/doi/10.1103/PhysRevSTAB.15.111303. Citing Articles without self-citations: 32 (WoS - Nov 2017).

REFEREED CONFERENCE PUBLICATIONS

- [19] R. D'Arcy and others. FLASHForward A Future-Oriented Wakefield-Accelerator Research and Development Facility at FLASH. (8):1692–1695, May 2017. URL http://jacow.org/ipac2017/papers/tupik006.pdf. https://doi.org/10.18429/JACoW-IPAC2017-TUPIK006.
- [20] G. Loisch, G. Asova, P. Boonpornprasert, R. Brinkmann, J. Good, M. Groß, G. Florian, H. Huck, M. Krasilnikov, O. Lishilin, A. Martinez de la Ossa, T. Mehrling, A. Oppelt, J. Osterhoff, Y. Renier, T. Rublack, and F. Stephan. Experimental Investigation of High Transformer Ratio Plasma Wakefield Acceleration at PITZ. In Proceedings, 8th International Particle Accelerator Conference (IPAC 2017): Copenhagen, Denmark, May 14-19, 2017, page TUPIKo18, 2017. URL http://inspirehep.net/record/1626950/files/tupik018.pdf.
- [21] P. A. Walker, P. D. Alesini, A. S. Alexandrova, M. P. Anania, N. E. Andreev, I. Andriyash, A. Aschikhin, R. W. Assmann, T. Audet, A. Bacci, I. F. Barna, A. Beaton, A. Beck, A. Beluze, A. Bernhard, S. Bielawski, F. G. Bisesto, J. Boedewadt, F. Brandi, O. Bringer, R. Brinkmann, E. Bründermann, M. Büscher, M. Bussmann, G. C. Bussolino, A. Chance, J. C. Chanteloup, M. Chen, E. Chiadroni, A. Cianchi, J. Clarke, J. Cole, M. E. Couprie, M. Croia, B. Cros, J. Dale, G. Dattoli, N. Delerue, O. Delferriere, P. Delinikolas, J. Dias, U. Dorda, K. Ertel, A. F. Pousa, M. Ferrario, F. Filippi, J. Fils, R. Fiorito, R. A. Fonseca, M. Galimberti, A. Gallo, D. Garzella, P. Gastinel, D. Giove, A. Giribono, L. A. Gizzi, F. J. Grüner, A. F. Habib, L. C. Haefner, T. Heinemann, B. Hidding, B. J. Holzer, S. M. Hooker, T. Hosokai, A. Irman, D. A. Jaroszynski, S. Jaster-Merz, C. Joshi, M. C. Kaluza, M. Kando, O. S. Karger, S. Karsch, E. Khazanov, D. Khikhlukha, A. Knetsch, D. Kocon, P. Koester, O. Kononenko, G. Korn, I. Kostyukov, L. Labate, C. Lechner, W. P. Leemans, A. Lehrach, F. Y. Li, X. Li, V. Libov, A. Lifschitz, V. Litvinenko, W. Lu, A. R. Maier, V. Malka, G. G. Manahan, S. P. D. Mangles, B. Marchetti, A. Marocchino, A. M. de la Ossa, J. L. Martins, F. Massimo, F. Mathieu, G. Maynard, T. J. Mehrling, A. Y. Molodozhentsev, A. Mosnier, A. Mostacci, A. S. Mueller, Z. Najmudin, P. A. P. Nghiem, F. Nguyen, P. Niknejadi, J. Osterhoff, D. Papadopoulos, B. Patrizi, R. Pattathil, V. Petrillo, M. A. Pocsai, K. Poder, R. Pompili, L. Pribyl, D. Pugacheva, S. Romeo, A. R. Rossi, E. Roussel, A. A. Sahai, P. Scherkl, U. Schramm, C. B. Schroeder, J. Schwindling, J. Scifo, L. Serafini, Z. M. Sheng, L. O. Silva, T. Silva, C. Simon, U. Sinha, A. Specka, M. J. V. Streeter, E. N. Svystun, D. Symes, C. Szwaj, G. Tauscher, A. G. R. Thomas, N. Thompson, G. Toci, P. Tomassini, C. Vaccarezza, M. Vannini, J. M. Vieira, F. Villa, C.-G. Wahlstrm, R. Walczak, M. K. Weikum, C. P. Welsch, C. Wiemann, J. Wolfenden, G. Xia, M. Yabashi, L. Yu, J. Zhu, and A. Zigler. Horizon 2020 EuPRAXIA design study. Journal of Physics: Conference Series, 874(1):012029, 2017. URL http://stacks.iop.org/1742-6596/874/i=1/a=012029.
- [22] G. Pathak, C. Benedetti, M. Groß, F. Grüner, A. Martinez de la Ossa, <u>T. Mehrling</u>, J. Osterhoff, C. Schroeder, and F. Stephan. *Simulations Study for Self-Modulation Experiment at PITZ*. In *Proceedings*, 6th International Particle Accelerator Conference (IPAC 2015): Richmond, Virginia, USA, May 3-8, 2015, page WEPWA005, 2015. URL http://accelconf.web.cern.ch/AccelConf/IPAC2015/papers/wepwa005.pdf.
- [23] J. Grebenyuk, T. Mehrling, F. S. Tsung, K. Floettman, and J. Osterhoff. Simulations of laser-wakefield acceleration with external electron-bunch injection for REGAE experiments at DESY. AIP Conference Proceedings, 1507:688–692, December 2012. URL http://scitation.aip.org/content/aip/proceeding/aipcp/10.1063/1.4773781. Proceedings of the AAC 2012, Austin, USA.

[24] J. Grebenyuk, T. Mehrling, K. Floettman, and J. Osterhoff. Laser-Wakefield Acceleration with External Bunch Injection at REGAE. Proceedings of RUPAC2012, September 2012. URL http://accelconf.web.cern.ch/AccelConf/rupac2012/papers/moppa005.pdf. Proceedings of RUPAC 2012, Saint-Petersburg, Russia.

CONFERENCE ABSTRACTS

[25] T. Mehrling. Accurate modeling of the hose instability in plasma based accelerators. In 9th International Particle Accelerator Conference (IPAC'18), 2018.

BOOK CHAPTERS

- [26] A. Martinez de la Ossa, <u>T. Mehrling</u>, and J. Osterhoff. volume 14 of *inSiDE*, chapter Electron-injection techniques in plasma-wakefield accelerators for driving free-electron lasers. September 2016. URL http://inside.hlrs.de/download.html. GAUSS Centre for Supercomputing (HLRS, LRZ, JSC).
- [27] T. Mehrling and A. Martinez de la Ossa. DESY Highlights and Annual Report: Accelerators 2016, chapter Taming plasma waves Start-to-end simulations reveal how to suppress hose instability in plasma wakefield accelerators, pages 60–61. Deutsches Elektronen-Synchrotron DESY: A Research Centre of the Helmholtz Association, 2016. URL http://www.desy.de/sites2009/site_www-desy/content/e410/e84441/e243152/Accelerators_2016_ger.pdf.
- [28] J. Grebenyuk, J. Vieira, <u>T. J. Mehrling</u>, J. L. Martins, A. Martinez de la Ossa, R. A. Fonseca, L. O. Silva, and J. Osterhoff. *NIC Symposium 2014 Proceedings: 12 –13 February 2014 Jülich, Germany*, chapter Radiation Generation in Plasma-Based Accelerators with Controlled Electron Injection, pages 427–434. Publication Series of the John von Neumann Institute for Computing (NIC). NIC, 2014.
- [29] T. J. Mehrling. DESY Highlights and Annual Report: Particle Physics 2012, chapter Tossed from wave to wave Assessing staged plasma acceleration, pages 78–79. Deutsches Elektronen-Synchrotron: A Research Centre of the Helmholtz Association, 2012. URL http://www.desy.de/sites2009/site_www-desy/content/e410/e84441/e139597/Particle_Physics_2012_eng.pdf.

OTHER

- [30] T. J. Mehrling. Theoretical and numerical studies on the transport of transverse beam quality in plasma-based accelerators. Dissertation (PhD thesis), Universität Hamburg, Institut für Experimentalphysik, Luruper Chaussee 149, 22761 Hamburg, Germany, August 2014. URL http://ediss.sub.uni-hamburg.de/volltexte/2014/7029/.
- [31] T. Mehrling. Studying laser wakefield acceleration of relativistic electron bunches in inhomogeneous plasma with PIC simulations. **Diplomarbeit (Master's thesis)**, Technische Universität München Arcisstraße 11, 80333 München, March 2011.