

# Appendix A

## List of author's publications

Below, the reader can find the full list of publications (as of the day of submission of this dissertation) in peer-reviewed journals, conference proceedings, and as book chapters authored or co-authored by the author of this dissertation during the author's postgraduate studies. The publications are listed in chronological order.

### A.1 Publications in peer-reviewed journals

- J. Psikal and M. Matys (2018). [Dominance of hole-boring radiation pressure acceleration regime with thin ribbon of ionized solid hydrogen](#). *Plasma Physics and Controlled Fusion* **60**, 044003.
- M. Matys, K. Nishihara, M. Kecova, J. Psikal, G. Korn, S. V. Bulanov (2020). [Laser-driven generation of collimated quasi-monoenergetic proton beam using double-layer target with modulated interface](#). *High Energy Density Physics* **36**, 100844.
- M. Jirka, O. Klimo, and M. Matys (2021) [Relativistic plasma aperture for laser intensity enhancement](#). *Physical Review Research* **3**, 033175.
- M. Matys, S. V. Bulanov, M. Kucharik, M. Jirka, J. Nikl, M. Kecova, J. Proska, J. Psikal, G. Korn and O. Klimo (2022). [Design of plasma shutters for improved heavy ion acceleration by ultra-intense laser pulses](#). *New Journal of Physics* **24**, 113046.
- M. Matys, J. Psikal, K. Nishihara, O. Klimo, M. Jirka, P. Valenta and S. V. Bulanov (2023). [High-quality laser-accelerated ion beams from structured targets](#). *Photonics* **10**, 61.

### A.2 Publications in conference proceedings

- M. Matys, J. Psikal and D. Margarone (2017). [Simulation studies on ion acceleration driven by 10 PW laser](#). In M. Fajardo, E. Westerhof, C. Riconda, A. Melzer, A. Bret, B. Dromey, editors, *44th EPS Conference on Plasma Physics*, page P1.204, Vol. 41F, ISBN: 979-10-96389-07, European Physical Society.
- J. Psikal and M. Matys (2017). [Ultra-intense laser interaction with specially-designed targets as a source of energetic protons](#). *Proc. SPIE 10241, Research Using Extreme Light: Entering New Frontiers with Petawatt-Class Lasers III*, 102411K

- [M. Matys, O. Klimo, J. Psikal, S.V. Bulanov \(2018\). Simulation studies on transmissivity of silicon nitride plasma shutter for laser pulse contrast enhancement.](#) In S. Coda, J. Berndt, G. Lapenta, M. Mantsinen, C. Michaut, S. Weber, editors, *45th EPS Conference on Plasma Physics*, page P4.2031, Vol. 42A, ISBN: 979-10-96389-08-7, European Physical Society.
- [M. Matys, K. Nishihara, M. Danielova, J. Psikal, G. Korn, S. V. Bulanov \(2019\). Generation of collimated quasi-mono-energetic ion beams using a double layer target with interface modulations](#) *Proc. SPIE 11037, Laser Acceleration of Electrons, Protons, and Ions V*, 110370Z.
- [J. Psikal, V. Horny, M. Zakova, M. Matys \(2019\). Comparison of ion acceleration from nonexpanded and expanded thin foils irradiated by ultrashort petawatt laser pulse](#) *Proc. SPIE 11037, Laser Acceleration of Electrons, Protons, and Ions V*, 1103708.
- [M. Matys, S. V. Bulanov, M. Kecova, M. Kucharik, M. Jirka, P. Janecka, J. Psikal, J. Nikl, J. Grosz, G. Korn, and O. Klimo \(2021\). Ion acceleration enhancement by laser-pulse shaping via plasma shutter](#) *Proc. SPIE 11779, Laser Acceleration of Electrons, Protons, and Ions VI*, 117790Q ;
- [Nikl, M. Jirka, M. Matys, M. Kuchařík, and O. Klimo \(2021\) .Contrast enhancement of ultra-intense laser pulses by relativistic plasma shutter.](#) *Proc. SPIE 11777, High Power Lasers and Applications*, 117770X;
- [M. Matys, M. Kecova, M. Kucharik, J. Nikl, S. V. Bulanov, M. Jirka, P. Janecka, J. Psikal, G. Korn, J. Grosz and O. Klimo \(2021\). Laser-driven ion acceleration enhancement using silicon nitride plasma shutter.](#) In G. Giruzzi, C. Arnas, D. Borba, A. Gopal, S. Lebedev, M. Mantsinen, editors, *47th EPS Conference on Plasma Physics*, page P3.2026, Vol. 45A, ISBN: 979-10-96389-13-1, European Physical Society.
- [M. Matys, S. V. Bulanov, M. Kucharik, M. Jirka, J. Nikl, M. Kecova, J. Proska, J. Psikal, G. Korn and O. Klimo \(2022\). Influence of the laser pulse steep rising front on ion acceleration.](#) In T. Klinger, J. Hobirk, S. Orlando, L. Lancia, D. Maric, E. Westerhof. editors, *48th EPS Conference on Plasma Physics*, page P2b.202, Vol. 46A, ISBN: 979-10-96389-16-2, European Physical Society.

### A.3 Book chapters

- [M. Matys, J. Psikal, M. Danielova, P. Valenta, S. V. Bulanov. \(2019\). Laser-driven ion acceleration using cryogenic hydrogen targets.](#) In K. Pešatová, B. Poláková, J. Cawley and Z. Červenková, editors, *Supercomputing in Science and Engineering 2017-18*, pages 149–151, ISBN 978-80-248-4289-9. VSB - Technical University of Ostrava.
- [M. Matys, P. Valenta, M. Kecova, K. Nishihara, J. Psikal, T. Zh. Esirkepov, J. K. Koga, A. Necas, G., M. Grittani, C. M. Lazzarini, O. Klimo, G. Korn, S. V. Bulanov. \(2021\). Laser-driven acceleration of charged particles.](#) In V. Vondrák, T. Kozubek and B. Jansík, editors, *Supercomputing in Science and Engineering 2019-20*, pages 86–88, ISBN 978-80-248-4567-8. VSB - Technical University of Ostrava.