

## Publications of the department in 2009

### Journals

- [1] J. Krása, A. Velyhan, K. Jungwirth, E. Krouský, L. Láska, K. Rohlena, M. Pfeifer, J. Ullschmied: **Repetitive outbursts of fast carbon and fluorine ions from sub-nanosecond laser-produced plasma**, Laser and Particle Beams 27 (2009) 171-178, doi:10.1017/S0263034609000238
- [2] L. Láska, S. Cavallaro, K. Jungwirth, J. Krása, E. Krouský, D. Margarone, A. Mezzasalma, M. Pfeifer, K. Rohlena, L. Ryc, J. Skála, L. Torrisci, J. Ullschmied, A. Velyhan, G. Verona-Rinati: **Experimental studies of emission of highly charged Au-ions and of X-rays from the laser-produced plasma at high laser intensities**, European Physical Journal D 54 (2009) 487-492.
- [3] L. Láska, J. Krása, A. Velyhan, K. Jungwirth, E. Krouský, D. Margarone, M. Pfeifer, K. Rohlena, L. Ryc, J. Skála, L. Torrisci, J. Ullschmied: **Experimental studies of generation of similar to 100 MeV Au-ions from the laser-produced plasma**, Laser and Particle Beams 27 (2009) 137-147, doi:10.1017/S0263034609000202
- [4] J. Krása, A. Velyhan, D. Margarone, E. Krouský, J. Ullschmied, J. Skála, L. Láska, K. Jungwirth, K. Rohlena: **Generation of high currents of carbon ions with the use of a sub-nanosecond NIR laser pulses**, Rev. Sci. Instrum. 81,1 (2010) v tisku (submitted 2009), doi:10.1063/1.3265317
- [5] D Margarone, J. Krasa, L. Laska, A. Velyhan, T. Mocek, J. Prokupek, E. Krousky, M. Pfeifer, S. Gammino, L. Torrisci, J. Ullschmied, B. Rus: **Measurements of the Highest Acceleration Gradient for Ions Produced with a Long Laser Pulse**, Rev.Sci. Instrum. 2009, submitted
- [6] Lorusso, J. Krása, L. Láska, V. Nassisi, L. Velardi: **Fe and Fe+2%Si targets as ion sources via UV laser ablation plasma**, Eur. Phys. J. D 54 (2009) 473 - 476
- [7] A. Velyhan, J. Krása, E. Krouský, L. Láska, D. Margarone, M. Pfeifer, K. Rohlena, J. Skála, J. Ullschmied, A. Lorusso, L. Velardi, V. Nassisi: **Ion emission from laser ablation of Cu and Cu98/Be2 alloy targets**. PPLA 4th Workshop Plasma Production by Laser Ablation; Radiation Effects and Defects in Solids. Submitted.
- [8] L. Láska, J. Badziak, K. Jungwirth, M. Kálal, J. Krása, E. Krouský, P. Kubeš, D. Margarone, P. Parys, M. Pfeifer, K. Rohlena, M. Rosinski, L. Ryc, J. Skála, L. Torrisci, J. Ullschmied, A. Velyhan, J. Wolowski: **Analysis of processes participating at intense iodine-laser-beam interactions with laser produced plasmas**. 4th Workshop on Plasma Production by Laser Ablation, PPLA09, Messina, 2009, Th Oral 09 (invited); Radiat. Eff. Defects Solids, in press.
- [9] J. Krása, A. Velyhan, E. Krouský, L. Láska, K. Rohlena, K. Jungwirth, J. Ullschmied, A. Lorusso, L. Velardi, V. Nassisi, A. Czarnecka, L. Ryc, P. Parys, J. Wolowski: **Emission characteristics and stability of laser ion sources**. Vacuum, in press.
- [10] L. Ryc, J. Krása, T. Nowak, J. Kravarik, D. Klír, E. Krouský, A. Lorusso, D. Margarone, V. Nassisi, M. Pfeifer, J. Skála, J. Ullschmied, A. Velyhan: **Application of single-crystal CVD diamond detector for simultaneous measurement of ions and X-rays from laser plasmas**. PPLA 4th Workshop Plasma Production by Laser Ablation; Radiation Effects and Defects in Solids. Submitted.
- [11] L. Torrisci, D. Margarone, E. Milani, G. Verona-Rinati, G. Prestopino, C. Tuve, R. Potenza, L. Láska, J. Krása, J. Ullschmied: **Diamond detectors for time-of-flight measurements in laser-generated plasmas**, Radiation Effects and Defects in Solids 164 (2009), Nos 5-9, 369-375
- [12] L. Torrisci, G. Foti, L. Giuffrida, D. Puglisi, J. Wolowski, J. Badziak, P. Parys, M. Rosinski, D. Margarone, J. Krasa, A. Velyhan, J. Ullschmied: **Single crystal silicon carbide detector of emitted ions and soft x rays from power laser-generated plasmas**, Jour. Appl. Phys. 105, 123304 (2009)
- [13] J. Krása, L. Láska, K. Rohlena, A. Velyhan, A. Czarnecka, P. Parys, L. Ryc, J. Wolowski: **Limits of applicability of time-of-flight ion-mass analyzer to uncovering partial currents of ions emitted by pulsed laser ion sources**. PPLA 4th Workshop Plasma Production by Laser Ablation, Radiation Effects and Defects in Solids. Submitted.
- [14] A. Kasperczuk, T. Pisarczyk, N.N. Demchenko, S.Yu. Gus'kov, M. Kálal, J. Ullschmied., E. Krouský, K. Mašek, M. Pfeifer, K. Rohlena, J. Skála, P. Pisarczyk: **Experimental and theoretical investigations of mechanisms responsible for plasma jets formation at PALS**. Laser and Particle Beams 27, 415-427, 2009, doi:10.1017/S0263034609000548
- [15] A. Kasperczuk, T. Pisarczyk, M. Kálal, J. Ullschmied, E. Krouský, K. Mašek, M. Pfeifer, K. Rohlena, J. Skála, P. Pisarczyk: **Influence of target material on structure of the plasma outflow produced by a partly defocused laser beam**. Applied Physics Letters, 94 (2009), č. 8, 081501-1-081501-3. ISSN 0003-6951. Dostupný z: <<http://link.aip.org/link/?APPLAB/94/081501/1>>
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- [20] J. Badziak, S. Borodziuk, T. Pisarczyk, T. Chodukowski, E. Krousky, K. Masek, J. Skala, J. Ullschmied, Yong-Joo Rhee: **Highly efficient acceleration and collimation of high-density plasma using laser-induced cavity pressure**, submitted to *Phys. of Plasmas*
- [21] R. Benocci, D. Batani, R. Dezulian, R. Redaelli, G. Lucchini, F. Canova, H. Stabile, J. Faure, E. Krousky, K. Mašek, M. Pfeifer, J. Skála, R. Dudžák, M. Koenig, V. Tikhonchuk, P. Nicolai, V. Malka: **Direct evidence of gas-induced laser beam smoothing in the interaction with thin foils**, *Physics of Plasmas* 16 (2009) 012703(1)-012703(5)
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- [23] J. Dostál, H. Turčičová, B. Králiková, L. Král, J. Huynh: **Iodine photodissociation laser SOFIA with MOPO-HF as a solid-state oscillator**, *Applied Physics B: Laser and Optics* 97 (2009) 687-694

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- [D2] Ph. Nicolai, C. Stenz, A. Kasperczuk, T. Pisarczyk, E. Krousky, D. Klir, K. Masek, M. Pfeifer, K. Rohlena, J. Skala, J. Ullschmied, M. Kalal, J. Kravárik, E. Tabakhoff, V. Tikhonchuk: **Laboratory studies of multi-material astrophysical jets propagation in plasmas** . 6th Inertial Fusion Sciences and Applications, September 6–11 2009, San Francisco, USA To be published in the Conference Proceedings
- [D3] A.Kasperczuk, T. Pisarczyk, N.N. Demchenko, S.Yu. Gus'kov, M. Kálal, J. Ullschmied, E. Krouský, K. Mašek, M. Pfeifer, K. Rohlena, J. Skála, P. Pisarczyk.: **Influence of target material on structure of partly defocused laser beam produced plasma outflow**. 36th EPS Conference on Plasma Physics Sofia, Bulgaria, 9.6. - 3.7. 2009 ECA Vol.33E, P-2.044 (2009), ISBN: 2-914771-61-4.
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- [D7] Badziak J., Pisarczyk P., Chodukowski T., Kasperczuk A., Parys P., Rosiński M., Wołowski J., Krousky E., Krása J., Mašek K., Pfeifer M., Skala J., Ullschmied J., Velyhan A., Dhareshwar L.J., Gupta N.K., Yong-Joo Rhee, Torrissi L., Pisarczyk P.: **Production of Dense Laser-Driven Plasma Jets Using a Cylindrical Channel**. 6th Inertial Fusion Sciences and Applications, September 6–11 2009, San Francisco, USA To be published in the Conference Proceedings
- [D8] M. Divoký, P. Straka: **Precise 2D-imaging color filter spectrograph with wedged optical filters in femtosecond systems diagnostics**, *UltraFast Optics (UFO VII) and High Field Short Wavelength (HFSW XIII) meetings*, Aug 31 - Sept 4 2009, Arcachon, France
- [D9] M. Divoký, P. Straka: **Pulse stretcher diagnostics by camera and colour filters**, *Conference Light at Extreme Intensities (LEI 2009)*, 16-21 October 2009, Brasov, Romania

## Thesis

- [S1] J. Dostál: **The simulation of the beam passing through the SOFIA laser system intended for the optical pumping of nonlinear crystals**, Dizertační práce, školitel: RNDr. H. Turčičová, CSc., konzultant: RNDr. J. Skála, ČVUT, FJFI
- [S2] J. Huynh: **Comparison of the optical parametric oscillator MOPO-HF and a fiber oscillator regarding the quality and intensity of the laser beams**, Diplomová práce, školitel: RNDr. Hana Turčičová, CSc., konzultant: Ing. Jan Šulc, Ph.D., ČVUT, FJFI

## Popularization

- [P1] J. Ullschmied: **Laboratoř PALS**, Čs.čas.fyz. Čs. čas. fyz. 59, č.4 (2009) 225
- [P2] K. Jungwirth, J. Ullschmied: **Badatelské centrum PALS = "top" výzkum laserového plazmatu**, Scientific American – české vydání, září 2009, str. 18