

## Publications of the department in 2008

### Journals

- [1] O. Renner, L. Juha, J. Krása, E. Krouský, M. Pfeifer, A. Velyhan, C. Granja, J. Jakubek, V. Linhart, T. Slavíček, Z. Vykydal, S. Pospíšil, J. Kravarik, J. Ullschmied, A. A. Andreev, T. Kampf, I. Uschmann, E. Foerster: **Low-energy nuclear transitions in subrelativistic laser-generated plasmas**, *Laser Part. Beams* 26 (2008) 249 - 257.
- [2] L. Ryc, L. Dobrzanski, F. Dubecky, J. Kaczmarczyk, M. Pfeifer, F. Riesz, W. Slys, B. Surma: **Application of MSM InP detectors to the measurement of pulsed X-ray radiation**, *Radiat. Eff. Defects Solids* 163 (2008) 559 - 567.
- [3] L. Torrioni, D. Margarone, L. Láska, M. Marinelli, E. Milani, G. Verona-Rinati, S. Cavallaro, L. Ryc, J. Krása, K. Rohlena, J. Ullschmied: **Monocrystalline diamond detector for ionizing radiation emitted by high temperature laser-generated plasma**, *J. Appl. Phys.* 103 (2008) 083106(1) - 083106(6).
- [4] D. Margarone, L. Torrioni, S. Cavallaro, E. Milani, G. Verona-Rinati, M. Marinelli, C. Tuve, L. Láska, J. Krása, M. Pfeifer, E. Krouský, J. Ullschmied, L. Ryc, A. Mangione, A. M. Mezzasalma: **Diamond detectors for characterization of laser-generated plasma**, *Radiat. Eff. Defects Solids* 163 (2008) 463 - 470.
- [5] A. Borrielli, L. Torrioni, A. M. Mezzasalma, F. Caridi, J. Badziak, J. Wolowski, L. Láska, J. Krása, J. Ullschmied: **Ion energy enhancement in laser-generated plasma of metallic-doped polymers**, *Radiat. Eff. Defects Solids* 163 (2008) 339 - 347.
- [6] S. Cavallaro, D. Margarone, L. Torrioni, L. Láska, J. Krása, J. Ullschmied: **Detection of energetic ions emitted from laser-produced plasma by means of CR39 solid state nuclear track detectors**, *Radiat. Eff. Defects Solids* 163 (2008) 371 - 379.
- [7] J. Krása, K. Jungwirth, S. Gammino, E. Krouský, L. Láska, A. Lorusso, V. Nassisi, M. Pfeifer, K. Rohlena, L. Torrioni, J. Ullschmied, A. Velyhan: **Partial currents of ion species in an expanding laser-created plasma**, *Vacuum* 83 (2008) 180 - 184.
- [8] J. Krása, K. Jungwirth, E. Krouský, L. Láska, K. Rohlena, J. Ullschmied, A. Velyhan: **Analysis of time-of-flight spectra of ions emitted from laser-generated plasmas**, *Radiat. Eff. Defects Solids* 163 (2008) 419 - 427.
- [9] L. Láska, K. Jungwirth, J. Krása, E. Krouský, K. Rohlena, J. Skála, A. Velyhan, D. Margarone, L. Torrioni, L. Ryc, J. Ullschmied: **Laser generation of Au ions with charge states above 50(+)**, *Rev. Sci. Instrum.* 79 (2008) 02C715(1) - 02C715(4).
- [10] D. Margarone, L. Láska, L. Torrioni, S. Gammino, J. Krása, E. Krouský, P. Parys, M. Pfeifer, K. Rohlena, M. Rosinski, L. Ryc, J. Skála, J. Ullschmied, A. Velyhan, J. Wolowski: **Studies of craters' dimension for long-pulse laser ablation of metal targets at various experimental conditions**, *Appl. Surf. Sci.* 254 (2008) 2797 - 2803.
- [11] L. Torrioni, D. Margarone, L. Láska, J. Krása, A. Velyhan, M. Pfeifer, J. Ullschmied, L. Ryc: **Self-focusing effect in Au-target induced by high power pulsed laser at PALS**, *Laser Part. Beams* 26 (2008) 379 - 387.
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- [14] S. Borodziuk, A. Kasperczuk, T. Pisarczyk, J. Ullschmied, E. Krouský, K. Mašek, M. Pfeifer, K. Rohlena, J. Skála, P. Pisarczyk: **Reversed scheme of thin foil acceleration**, *Applied Physics Letters* 93, 101502 (2008) \*
- [15] J. Badziak, A. Kasperczuk, P. Parys, T. Pisarczyk, M. Rosinski, L. Ryc, J. Wolowski, R. Suchanska, J. Krása, E. Krouský, L. Láska, K. Mašek, M. Pfeifer, K. Rohlena, J. Skála, J. Ullschmied, L. J. Dhareshwar, I. B. Foldes, T. Suta, A. Borrielli, A. Mezzasalma, L. Torrioni, P. Pisarczyk: **The effect of high-Z dopant on laser-driven acceleration of a thin plastic target**, *Appl. Phys. Lett.* 92 (2008) 211502(1) - 211502(3). \*
- [16] A. Kasperczuk, T. Pisarczyk, S. Y. Gus'kov, J. Ullschmied, E. Krouský, K. Mašek, M. Pfeifer, K. Rohlena, J. Skála, M. Kálal, V. Tikhonchuk, P. Pisarczyk: **Laser energy transformation to shock waves in multi-layer flyers**, *Radiat. Eff. Defects Solids* 163 (2008) 519 - 533.
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- [18] V. T. Tikhonchuk, P. Nicolai, X. Ribeyre, C. Stenz, G. Schurtz, A. Kasperczuk, T. Pisarczyk, L. Juha, E. Krouský, K. Mašek, M. Pfeifer, K. Rohlena, J. Skála, J. Ullschmied, M. Kálal, D. Klír, J. Kravarik, P. Kubeš, P. Pisarczyk: **Laboratory modeling of supersonic radiative jets propagation in plasmas and their scaling to astrophysical conditions**, *Plasma Phys. Control. Fusion* 50 (2008) 124056(1) - 124056(11).

- [19] Ph. Nicolai, C. Stenz, A. Kasperczuk, T. Pisarczyk, D. Klir, L. Juha, E. Krousky, K. Masek, M. Pfeifer, K. Rohlena, J. Skala, V. Tikhonchuk, X. Ribeyre, S. Galera, G. Schurtz, J. Ullschmied, M. Kalal, J. Kravarik, P. Kubes, P. Pisarczyk, T. Schlegel: **Studies of supersonic, radiative plasma jet interaction with gases at the Prague Asterix Laser System facility**, *Phys. Plasmas* 15, 082701 (2008).
- [20] J. Limpouch, O. Renner, O. Klimo, D. Klir, V. Kmetik, E. Krousky, R. Liska, K. Masek, W. Nazarov, M. Sinor: **Laser energy conversion into line x-ray emission in low-density chlorine-doped aerogel targets**, *Laser and Particle Beams* (submitted).
- [21] M. Divoký, P. Straka: **Simple two-dimensional-imaging spectrograph with wedged narrow band filters**, *Rev. Sci. Instrum.* 79, 123114 (2008).
- [22] J. Dostál, H. Turčičová, B. Králiková, L. Král, J. Huynh: **Iodine photodissociation laser SOFIA with MOPO-HF as a solid-state oscillator**. *Odesláno k publikaci do Appl Phys. B*.
- [23] R. Benocci, D. Batani, R. DeZulian, R. Redaelli, G. Lucchini, F. Canova, H. Stabile, J. Faure, E. Krouský, K. Mašek, M. Pfeifer, J. Skála, R. Dudžák, M. Koenig, V. Tikhonchuk, Ph. Nicolai, V. Malka: **Gas-induced smoothing of laser beams studied by interaction with thin foils**, *Plasma Phys. Control. Fusion* 50 (2008) 115007(1) - 115007(12).
- [24] R. Benocci, D. Batani, R. DeZulian, R. Redaelli, G. Lucchini, F. Canova, H. Stabile, J. Faure, E. Krouský, K. Mašek, M. Pfeifer, J. Skála, R. Dudžák, M. Koenig, V. Tikhonchuk, P. Nicolai, V. Malka: **Current advances in smoothing of laser intensity profile**, *Radiat. Eff. Defects Solids* 163 (2008) 307 - 315.
- [25] T. Desai, D. Batani, M. Bussoli, A. M. Villa, R. DeZulian, E. Krouský: **Laboratory craters: Modeling experiments for meteorite impact craters**, *IEEE Trans. Plasma Sci.* 36 (2008) 1132 - 1133.
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- [27] I.G. Lebo, A. I. Lebo, D. Batani, R. DeZulian, R. Benocci, R. Jafer, E. Krouský: **Simulations of shock generation and propagation in laser-plasmas**, *Laser Part. Beams* 26 (2008) 179 - 188.
- [28] A. Velyhan: **Interaction of charged particle beams with dust grains**, *Planet Space Sci.* 56 (2008) 1054 - 1056.

## Conferences

- [D1] K. Jungwirth: **Presentation of ELITPALS - Extreme Light Infrastruktura**, *Slavnostní konference k zahájení operačního programu Výzkum a vývoj pro inovace*, 8. prosince 2008, Ostrava.
- [D2] J. Ullschmied: **Laser Plasma Research at the PALS Research Centre - the Present and the Future**, *23rd Symposium on Plasma Physics and Technology, Prague, June 16-19, 2008, Book of Abstracts p. 74*
- [D3] O. Renner, L. Juha, J. Krása, E. Krouský, C. Granja, V. Linhart, M. Sinor, V. Perina, A. A. Andreev: **Search for low-energy nuclear transitions in laser-produced plasma**, *Proceedings of the 35th EPS Conference on Plasma Phys. Hersonissos, 9 - 13 June 2008 ECA Vol.32, P-1.126 (2008)*
- [D4] L. Ryc, J. Krása, L. Láska, P. Parys, K. Rohlena, J. Wokowski: **Abrupt change in X-ray and ion emission of the PALS laser plasma at laser intensity of similar to  $10^{15}$  W/cm<sup>2</sup>**, *AIP Proceedings of the International Conference on Research and Applications of Plasmas/4th German-Polish Conference on Plasma Diagnostics for Fusion and Applications/6th French-Polish Seminar on Thermal Plasma in Space and Laboratory (PLASMA 2007), 16-19 October 2007, Greifswald, GERMANY, Vol.993 (2008) pp. 323-326, ISBN: 978-0-7354-0512-7.*
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- [D6] J. Krása, A. Velyhan, K. Jungwirth, E. Krouský, L. Láska, K. Rohlena, M. Pfeifer, J. Ullschmied: **Generation of MeV carbon and fluorine ions by subnanosecond laser pulses**, *Proceedings of the 35th EPS Conference on Plasma Physics, 9 - 13 June 2008, Hersonissos, Greece, ECA Vol.32(2008) P-4.133.*
- [D7] L. Láska, S. Cavallaro, K. Jungwirth, J. Krása, E. Krouský, D. Margarone, A. Mezzasalma, M. Pfeifer, K. Rohlena, L. Ryc, J. Skála, L. Torrisi, 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**, *SPPT 08, Praha, June 2008; EPJ-D (2009) in press.*
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- [D9] L. Láska, J. Krása, A. Velyhan, K. Jungwirth, E. Krouský, D. Margarone, M. Pfeifer, K. Rohlena, L. Ryc, J. Skála, L. Torrisi, J. Ullschmied: **Experimental studies of generation of ~100 MeV Au-ions from the laser-produced plasma**, *XXX. ECLIM 08, Darmstadt (Germany), 2008; LPB - in press.*

- [D10] 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**, XXX. ECLIM 08, Darmstadt (Germany), 2008; LPB - in press.
- [D11] Pisarczyk T., Kasperczuk A., Borodziuk S., Kalal M., Guskov S. Yu., Ullschmied J., Krousky E., Masek K., Pfeifer M., Rohlena K., Skala J., Pisarczyk P.: **Investigations of acceleration and collision of planar flyer targets with massive target on the PALS experiment**, 30th Eu. Conf. on Laser Interaction with Matter (ECLIM), Darmstadt, Germany, Aug. 31 – Sep. 5, 2008.
- [D12] J. Wolowski, J. Badziak, A. Borrielli, L. Dareshwar, I. B. Foldes, A. Kasperczuk, E. Krouský, L. Láska, K. Mašek, A. Mezzasalma, P. Parys, M. Pfeifer, T. Pisarczyk, M. Rosinski, L. Ryc, R. Suchanska, T. Suta, L. Torrasi, J. Ullschmied, P. Pisarczyk: **Application of laser-induced double ablation of plasma for enhanced macroparticle acceleration**, *J. Phys.: Conf. Ser.* 112 (2008) 022072(1) - 022072(4).
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- [D23] J. Dostál, M. Divoký, M. Smrž, O. Novák, J. Huynh, L. Král, H. Turčičová, B. Králiková, P. Straka: **SOFIA iodine laser system as a driver for OPCPA**, *International Conference on Ultrahigh Intensity Lasers (ICUIL 2008), 27-31 October 2008, Tongli, China*.
- [D24] O. Novák, M. Divoký, P. Bohm, M. Smrž, R. Sedlář, P. Straka, H. Turčičová: **Proposal of ultra-high-power beams at the kilojoule iodine laser PALS**, *International Conference on Ultrahigh Intensity Lasers (ICUIL 2008), 27-31 October 2008, Tongli, China*.
- [D25] A. Velyhan, B. Bienkowska, I. M. Ivanova-Stanik, L. Juha, L. Karpinski, D. Klír, M. Králík, J. Krása, J. Kravárik, P. Kubeš, R. Miklaszewski, M. Paduch, H. Schmidt, M. Scholz, J. Šolc, K. Tomaszewski: **Influence of emission time on determination of energy distribution of D-D neutrons produced by plasma focus device**, *Proceedings of the 35th EPS Conference on Plasma Physics, 9 - 13 June 2008, Hersonissos, Greece, ECA Vol.32(2008)P-2.120*.

## Thesis

- [S1] R. Sedlář: **Optimization of laser beam wavefronts**, diplomová práce, 2008, FJFI (vedoucí P. Straka).
- [S2] J. Huynh: **Optimalizace plynné náplně vysokovýkonného jódového fotodisociačního laseru s cirkulací a dlouhým čerpáním**. Výzkumný úkol ČVUT FJFI 2008 (vedoucí H. Turčičová).

## Patent Application

P. Straka, M. Divoký: **Zobrazující spektrograf**, PV 2008-385.