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Editorial from the Editor-in-Chief

Laser interaction with matter and heavy ion fusion

Our journal *Laser and Particle Beams* is devoted to covering trends and development in basic and applied physics in the research area of high power particle and laser beam interaction with matter. Including this issue, we published a total of 64 articles in 2008. This amounts to a decrease in the number of published articles of about 10% while at the same time the total number of printed pages stays close to the annual page limit of 700 pages. This is fully in line with the editorial policy to give authors ample room to describe their results in full detail, and moreover to put it into a perspective of the main topics that we want to cover in *Laser and Particle Beams*. Since *Laser and Particle Beams* has a very high impact factor of 4.696, the submission rate to our journal increases steadily. Therefore, we have to expect a slight delay in publication of accepted articles. However, the editorial board will try to have all relevant articles published as soon as possible by turning out the first issue of next year earlier as usual.

This year we also introduced a new section which we call: Invited Review article. The first of these articles to appear in this section covers trends in stimulated Brillouin scattering (Ostermeyer *et al.*, 2008) and this paper is 66 printed pages long. On the other hand, we also want to encourage short communication related to new developments. The first example of such short communication is by Hora & Hoffmann, 2008. The decision to give authors as much printing space as they need to describe their results found good resonance among the authors. Some examples of detailed papers are Rodriguez *et al.* (2008), Tahir *et al.* (2008), Zvorykin *et al.* (2008), Lomonosov (2007), Torrisi *et al.* (2007), and Varro (2007).

Early in August 2008, the Heavy Ion Fusion Symposium took place in Tokyo to discuss the progress of inertial fusion in general, with emphasis on the role of heavy ion drivers, beam physics, target design, fusion chambers, dense plasmas, lasers and their interactions with matter, and inertial fusion power systems. The status of inertial fusion programs in general and especially the programs related to particle beam drivers in Japan, USA, and Europe were discussed (Johzaki *et al.*, 2007; Kawamura *et al.*, 2006; Nakamura *et al.*, 2006; Sasaki *et al.*, 2006; Someya *et al.*, 2006). This symposium clearly stimulated further progress toward inertial fusion energy production using intense ion beams and basic understanding of associated science and technologies. Heavy-ion accelerators are promising candidate drivers for energy production due to their high repetition rate and efficiency. The most powerful heavy ion beam facility currently is operated by the Gesellschaft für Schwerionenforschung in Darmstadt. The development there in accelerator and target technology has been reported frequently also in our journal (Funk *et al.*, 1998; Meyertervehn *et al.*, 1990; Ulrich *et al.*, 1987; Hoffmann *et al.*, 2005; Tahir *et al.*, 2007; Temporal *et al.*, 2005), and will certainly have an impact on the development of ion drivers for fusion energy. Currently, the attention of the scientific community in our field is focused on the progress of laser fusion. An important conference in this field, the XXX ECLIM (European Conference on Laser Interaction with Matter), was held in August 2008 in Darmstadt. *Laser and Particle Beams* was a sponsor of this conference and we did encourage participants of the ECLIM to submit their research results as research papers to the journal. Many participants of ECLIM are readers or authors of *Laser and Particle Beams* and reported about new results of their continued research projects. Earlier results of these projects had in some cases already been reported in our journal (Abdallah *et al.*, 2007; Badziak *et al.*, 2006; Baeva *et al.*, 2007; Nobile *et al.*, 2006).

REFERENCES

Abdallah, J., Batani, D., Desai, T., Lucchini, G., Faenov, A., Pikuz, T., Magunov, A. & Narayanan, V. (2007). High resolution X-ray emission spectra from picosecond laser irradiated Ge targets. *Laser Part. Beams* **25**, 245–252.

Badziak, J., Glowacz, S., Hora, H., Jablonski, S. & Wolowski, J. (2006). Studies on laser-driven generation of fast high-density plasma blocks for fast ignition. *L Laser Part. Beams* **24**, 249–254.

Baeva, T., Gordienko, S. & Pukhov, A. (2007). Relativistic plasma control for single attosecond pulse generation: Theory, simulations, and structure of the pulse. *Laser Part. Beams* **25**, 339–346.

Funk, U.N., Bock, R., Dornik, M., Geissel, M., Stetter, M., Stowe, S., Tahir, N. & Hoffmann, D.H.H. (1998). High energy density in solid rare gas targets and solid hydrogen. *Nucl. Instr.& Meth. Phys. Res. A* **415**, 68–74.

Hoffmann, D.H.H., Blazevic, A., Ni, P., Rosmej, O., Roth, M., Tahir, N.A., Tauschwitz, A., Udrea, S., Varentsov, D., Weyrich, K. & Maron, Y. (2005). Present and future perspectives for high energy density physics with intense heavy ion and laser beams. *Laser Part. Beams* **23**, 47–53.

Hora, H. & Hoffmann, D.H.H. (2008). Using petawatt laser pulses of picosecond duration for detailed diagnostics of creation and decay processes of B-mesons in the LHC. *Laser Part. Beams* **26**, 503–505.

Johzaki, T., Sakagami, H., Nagatomo, H. & Mima, K. (2007). Holistic simulation for FIREX project with FI3. *Laser Part. Beams* **25**, 621–629.

Kawamura, T., Horioka, K. & Koike, F. (2006). Potential of K alpha radiation by energetic ionic particles for high energy density plasma diagnostics. *Laser Part. Beams* **24**, 261–267.

Lomonosov, I.V. (2007). Multi-phase equation of state for aluminum. *Laser Part. Beams* **25**, 567–584.

Meyertervehn, J., Witkowski, S., Bock, R., Hoffmann, D.H.H., Hofmann, I., Muller, R.W., Arnold, R. & Mulser, P. (1990). Accelerator and target studies for heavy-ion fusion at the Gesellschaft-fur-Schwerionenforschung. *Phys. Fluids B* **2**, 1313–1317.

Nakamura, T., Sakagami, H., Johzaki, T., Nagatomo, H. & Mima, K. (2006). Generation and transport of fast electrons inside cone targets irradiated by intense laser pulses. *Laser Part. Beams* **24**, 5–8.

Nobile, A., Nikroo, A., Cook, R.C., Cooley, J.C., Alexander, D.J., Hackenberg, R.E., Necker, C.T., Dickerson, R.M., Kilkenny, J.L., Bernat, T.P., Chen, K.C., Xu, H., Stephens, R.B., Huang, H., Haan, S.W., Forsman, A.C., Atherton, L.J., Letts, S.A., Bono, M.J. & Wilson, D.C. (2006). Status of the development of ignition capsules in the US effort to achieve thermonuclear ignition on the national ignition facility. *Laser Part. Beams* **24**, 567–578.

Ostermeyer, M., Kong, H.J., Kovalev, V.I., Harrison, R.G., Fotiadi, A.A., Megret, P., Kalal, M., Slezak, O., Yoon, J.W., Shin, J.S., Beak, D.H., Lee, S.K., Lu, Z., Wang, S., Lin, D., Knight, J.C., Kotova, N.E., Straber, A., Scheikh-Obeid, A., Riesbeck, T., Meister, S., Eichler, H.J., Wang, Y., He, W., Yoshida, H., Fujita, H., Nakatsuka, M., Hatae, T., Park, H., Lim, C., Omatsu, T., Nawata, K., Shiba, N., Antipov, O.L., Kuznetsov, M.S. & Zakharov, N.G. (2008). Trends in stimulated Brillouin scattering and optical phase conjugation. *Laser Part. Beams* **26**, 297–362.

Rodríguez, R., Florido, R., Gil, J.M., Rubiano, J.G., Martel, P. & Mínguez, E. (2008). RAPCAL code: A flexible package to compute radiative properties for optically thin and thick low and high-Z plasmas in a wide range of density and temperature. *Laser Part. Beams* **26**, 433–448.

Sasaki, T., Yano, Y., Nakajima, M., Kawamura, T. & Horioka, K. (2006). Warm-dense-matter studies using pulse-powered wire discharges in water. *Laser Part. Beams* **24**, 371–380.

Someya, T., Miyazawa, K., Kikuchi, T. & Kawata, S. (2006). Direct-indirect mixture implosion in heavy ion fusion. *Laser Part. Beams* **24**, 59–69.

Tahir, N.A., Spiller, P., Shutov, A., Lomonosov, I.V., Gryaznov, V., Piriz, A.R., Wouchuk, G., Deutsch, C., Fortov, V.E., Hoffmann, D.H.H. & Schmidt, R. (2007). HEDgeHOB: High-energy density matter generated by heavy ion beams at the future facility for antiprotons and ion research. *Nucl. Instr. Meth. Phys. Res. A* **577**, 238–249.

Tahir, N.A., Weick, H., Shutov, A., Kim, V., Matveichev, A., Ostrik, A., Sultanov, V., Lomonosov, I.V., Piriz, A.R., Cela, J.J.L. & Hoffmann, D.H.H. (2008). Simulations of a solid graphite target for high intensity fast extracted uranium beams for the Super-FRS. *Laser Part. Beams* **26**, 411–423.

Temporal, M., Lopez-Cela, J.J., Piriz, A.R., Grandjouan, N., Tahir, N.A. & Hoffmann, D.H.H. (2005). Compression of a cylindrical hydrogen sample driven by an intense co-axial heavy ion beam. *Laser Part. Beams* **23**, 137–142.

Torrisi, L., Margarone, D., Gammino, S. & Ando, L. (2007). Ion energy increase in laser-generated plasma expanding through axial magnetic field trap. *Laser Part. Beams* **25**, 453–464.

Ulrich, A., Korner, H.J., Krotz, W., Ribitzki, G., Murnick, D.E., Matthias, E., Kienle, P. & Hoffmann, D.H.H. (1987). Heavy-ion excitation of rare-gas excimers. *J. Appl. Phys.* **62**, 357–361.

Varro, S. (2007). Linear and nonlinear absolute phase effects in interactions of ulrashort laser pulses with a metal nano-layer or with a thin plasma layer. *Laser Part. Beams* **25**, 379–390.

Zvorykin, V.D., Berthe, L., Boustie, M., Levchenko, A.O. & Ustinovskii, N.N. (2008). Planar shock waves in liquids produced by high-energy KrF laser: A technique for studying hydrodynamic instabilities. *Laser Part. Beams* **26**, 461–471.