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Editorial from the Editor in Chief

Laser and Particle Beams in 2010

With the first issue of 2010, the editor in chief wants to take the opportunity to thank authors of *Laser and Particle Beams* for choosing this journal to publish their significant research results. In addition, I want to thank our readers and subscribers that they regard *Laser and Particle Beams* as a first rate source of information on new scientific developments in the field of basic physics issues regarding intense laser and particle beams, pulse power technology associated with beam generation, and related applied science topics. The subjects we covered last year included the physics of high energy densities; non-LTE phenomena; hot dense matter and related atomic, plasma and hydrodynamic physics and astrophysics; intense sources of coherent radiation; high current particle accelerators; beam-wave interaction; and pulsed power technology (Adonin *et al.*, 2009; Andreev *et al.*, 2009; Chen *et al.*, 2008; Fazio *et al.*, 2009; Hong *et al.*, 2009; Imasaki & Li, 2009; Kasperczuk *et al.*, 2008; Kovalchuk *et al.*, 2009; Laska *et al.*, 2009; Li *et al.*, 2009; Popov *et al.*, 2009; Tahir *et al.*, 2009; Yu *et al.*, 2009). We are happy to see that the number of submissions is steadily rising. Thus, we published 85 research papers including one review article on certain aspects of laser fusion (Hora, 2009), and one letter (Hasi *et al.*, 2009).

Laser and Particle Beams is following the development of inertial fusion. Significant improvements have been made especially in the field of target design and performance (Cook *et al.*, 2008; Izgorodin *et al.*, 2009; Koresheva *et al.*, 2009; Moreau *et al.*, 2009).

The scientific community is looking toward Livermore to watch the National Ignition Facility (NIF) start the ignition campaign and we all hope for successful experiments to show that ignition of a fusion pellet is possible on a laboratory scale. When this important goal is achieved, the community has to search for a driver that is efficient on a level of 20–30%. Here advanced laser systems may play a role, but also pulse power generators and ion accelerators. There are a number of lasers and pulsed power machines dedicated to inertial fusion research. However, the situation is quite different in the accelerator field. Here basic physics issues of high energy physics are driving accelerator technology (Hora & Hoffmann, 2008), aspects of applied science are only slowly entering considerations for new accelerators.

Accelerator technology with application to fusion energy is under development at LBNL Berkeley, ITEP Moscow, and GSI Darmstadt (Barnard *et al.*, 2003; Hoffmann *et al.*, 2005; Sharkov, 2007). Although none of the existing accelerators will be able to ignite a fusion pellet, every effort is made to improve this situation. We will see the 30th Heavy Ion Fusion Symposium this year in September followed by the European Conference on Laser Interaction with Matter. Our journal will closely follow these conferences and we expect results from these meetings published in our journal.

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