5/7/14

Norman Rostoker Chair Activities 2013-2014

T. Tajima

Department of Physics and Astronomy

(1) Research activities

Publications

503. H.Y.Wang, X. Q. Yan, J. E. Chen, X. T. He, W. J. Ma, J. H. Bin, J. Schreiber, T. Tajima, and D. Habs, *Efficient and stable acceleration by irradiating a two-layer target with a linearly polarized laser pulse,* Phys. Plasmas **20**, 013101 (2013).

504. F. L. Zheng, S. Z. Wu, H. C. Wu, C. T. Zhou, H. B. Cai, M. Y. Yu, T. Tajima, X. Q. Yan, and X. T. He, *Laser-driven collimated tens-GeV monoenergetic protons from mass-limited target plus preformed channel*, Phys. Plasmas **20**, 013107 (2013).

505. Adams, J.H.,….Tajima, T., ….et al. (JEM-EUSO collaboration), *An evaluation of the exposure in nadir observation of the JEM-EUSO mission,* Astropart. Phys.**44**, 76 (2013).

506. G. Mourou, W. Brocklesby, T. Tajima, J. Limpert, *The future is fibre accelerators,* Nature Photon. **7**, 258 (2013).

507. T. Tajima, W. Brocklesby, and G. Mourou, *The next laser powerhouse,* Opt. Photon. News, no.5, 36 (2013).

508. J. H. Bin, W.J. Ma, K. Allinger, H.Y. Wang, D. Kiefer, S. Reinhardt, P. Hilz, K. Khrennikov, S. Karsch, X.Q. Yan, F. Krausz, T. Tajima, D. Habs, and J. Schreiber, *Ultrasmall divergence of laser-driven ion beams from nanometer thick foils,* Phys. Plasmas **20**, 073113 (2013).

509. Tajima, T., Mourou, G., Brocklesby, W., and Limpert, J., *Can fibre be the future of high-energy physics?,* CERN Courier, Oct. 21(2013).

510. W. Chou, G. Mourou, N. Solyak, T. Tajima, M. Velasco*, HFiTT – Higgs Factory in Tevatron Tunnel.* Fermilab-TM-2558-APC (2013).

511. T. Tajima, *The frontier of ultrahigh power lasers in Europe,* Rev. Laser Engin. **49**, 111 (2014).

512. T. Seggebrock, I. Dornmair, T. Tajima, G. Mourou, and F. Gru¨ner, *Theory of the Pulse Intensity-Duration Conjecture for FEL,* PTEP **2014**, 013A02 (2014).

513. T. Ebisuzaki and T. Tajima, *Asrophysical ZEV acceleration in the relativistic jet from an accreting supermassive blackhole,* Astropart. Phys. **56**, 9 (2014).

514. J. T. Liu, W. T. Wang, Q. Chen, Z.Ji. Zhang, Y. Tian, R. Qi, C. Weng, T. Tajima, R. X. Li, and Z. Z. Xu, *The phase-lock dynamics of the laser wakefield acceleration with an intensity-decaying laser pulse,* in press in Appl. Phys. Lett. (2014).

515. W.S. Brocklesby, J. Nilsson, T. Schreiber, J. Limpert, A. Brignon, J. Bourderionnet, L. Lombard, V. Michau, M. Hanna, I. Zaouter, T. Tajima, Gérard Mourou, *ICAN as a new laser paradigm for high energy, high average power femtosecond pulses,* Euro. Phys. J. **223**, (2014).

516. G. Mourou and T. Tajima, *Summary of the IZEST science and aspiration*, Eur. Phys. J. **223**, 979 (2014).

517. W. S. Brocklesby, G. Mourou, T. Tajima, and J. Limpert, *Overview of the International Coherent Amplyfication Networl (ICAN),* Rev. Laser Engin. **42**,149 (2014).

518. T. Tajima, *Laser Acceleration in Novel Media*, Eur. Phys. J. **223**, 1037 (2014).

519 T. Ebisuzaki and T. Tajima, *Pondermotive acceleration of charged particles along the relativistic jets of an accreting blackhole,,* Eur. Phys. J. **223**, 1113 (2014).

520. M.L.Zhou, S.Zhao, H.Y.Wang, H.Y.Lu, C.Lin, Y.R.Lu, T.Tajima, X.T.He C.E.Chen, Y.Q.Gu, and X.Q.Yan, *Instability-Free Ion Acceleration by Two Laser Pulses,* Eur. Phys. J. **223,** (2014).

521. R. Soulard, M. N. Quinn, T. Tajima, and G. Mourou, *A novel laser architecture for space debris removal,* to be submitted (2014).

Patents

1. Nakajima, K., Mourou, G., and Tajima, T., *Compact, efficient, high average power FEL for EUV lithography at 13.5nm,* Ref. P23946FR (2013).

2. Nakajima, K., Mourou, G., and Tajima, T., *Compact, efficient, high average power FEL for EUV lithography at 6.7nm* (2013).

3. Tajima, T., and Mourou, G., *Crystal LWFA (Laser Wakefield Accelerator) and its Applications,* submitted March 14, 2014. US #61953182.

4. Tajima, T., *Schwinger fiber accelerator,* submitted March 18, 2014. US #61954918.

5. Mourou, G., Soulard, M., Quinn, M., and Tajima, T., *Novel laser architecture to manage space debris* (EU patent submitted, 2014).

Invited talks

IZEST LLNL (LLNL, July 17, 2013) Plenary talk
Einstein Lectures (SIOM, Shanghai; Jiatong Shanghai University, Shanghai; Peking University, Beijing; IOP, Beijing, Sept., 2013)
High Power Laser Workshop (SLAC, Oct. 1, 2013)
Departmental Colloquium (Oct.17 ,2013)
IZEST Tokyo (Tokyo, Nov. 18, 2013) Plenary talk
Ecole Polytechnique "Passion Lumiere Extreme" Lecture for the private fundraisers (Jan. 22, 2014)

Special distinctions

2013 Einstein Professorship award of CAS
Establishment of Einstein Professorship visitor program at UCI (CAS)
Establishment of Norman Rostoker Visiting Scholar Program
Establishment of Norman Rostoker Distinguished Lecture Series

Global research activities

IZEST Deputy Director

Organizer: IZEST Conference Livermore (July, 2013), and IZEST Conference Tokyo (Nov., 2013)
Compilation of the IZEST Science Case
Promotion of the relation between UCI and Ecole Polytechnique (invitation of EP President to UCI, in peparation)

ICUIL Chair

Leadership in world's high intensity laser science and technology
Organization of the 2014 ICUIL Conference (Goa, India, Oct. 12-17, 2014)

Collaborative research establishment

Launch of Interschool Photo-Medical Research collaboration (with Schools of Engineering and Medicine)
Collaboration with LLNL Photon Science Directorate
Negotiation with ELI-NP for collaboration

Assists in garnering Research Funds of TAE to UCI

To the Chairman of the Department and facilitating his operation (~$380k/y)
To Prof. Z. Lin (~$110k/y)

Grants and Contracts

PI: Norman Rostoker Scholarship Fund at UCI (Nov., 2013-) (~$40k/y)

(2) Teaching and advising

Class teaching

PHY249: 'High Field Science' (Winter 2014)

Individual research supervision (PHY295)

Yoonwoo Hwang; Po-Chun Yeh

Launching first lab tour to LLNL, preparing summer internships on photo-medical physics work

Curriculum development

Establishment of Norman Rostoker Scholarship (NRS)

Serving Chair of the NRS Committee, first NRS selection

Activities for interschool curriculum (Photo-Medical Physics Program (PMPP) among Schools of Phys. Sci., Engineering, Medicine; Applied Physics Program), Also in view of the establishment of "Applied Physics Program"

Publication of the term projects (in preparation)

Students' term project results in PHY249 (Winter 2014): in preparation for publication in Phys. Rev. "Ponderomotive Acceleration"

Lecture at UCI Students' Section of American Nuclear Society

(on campus April 24, 2014)

(3) Department, School, University, and Community Services

Serving Science Advisory Board of MBI (Berlin)

Serving Science Advisory Board of ELI-NP (Bucharest)

Serving International Science Advisory Committee of XCELS (Russia)

Serving International Honorary Advisory Committee of AAPPS (Association of Asian Pacific Physical Society)

Advising Ministry of Education of Japan on photon science policy

Advising DG of KEK (Tsukuba)

Advising DG's Office of CERN (Geneva)
Advising President of Ecole Polytechnique (Paris), President of Osaka University and its Director of ILE (Osaka)
Advisory of Head of CEA (France) DAM
Advising President of Optical Society of America
Collaborating with ICFA (International Committee for Future Accelerators) as Chair of ICUIL under IUPAP
Department promotion committee chair (for Dr. W. Heidbrink's case)
Reviewing journals
Editor to the Spc. Issue of Eur. Phys. J. (2014)
Assisted in the MOU between UCI (Dean) and ELI-NP (DG) (Jan, 2014)
Assisted in the MOU between UCI (Chairman) and Nihon University (Chairman) (March, 2014)
Incubating the relation between the academia and industry by bringing the senior officials of UCI to TAE
High Impact Hiring Initiative promotion with the Office of Dean (Jan.- 2014)
Nomination (and eventual approval) of Professor N. Rostoker for the 2014 Outstanding Emeritus of UCI Emeriti Association (2014)