

**CHANDRASHEKHAR JOSHI**

Electrical Engineering Department  
 University of California, Los Angeles, Los Angeles, CA 90095  
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PROFESSIONAL EXPERIENCE

**Distinguished Professor of  
 Electrical Engineering, UCLA** 2006-Present

**Professor of Electrical Engineering, UCLA** 1988-2006

**Director** 1992-2010  
 Center for High Frequency Electronics, UCLA

**Director** 1998-Present  
 Neptune Laboratory for Advanced  
 Accelerator Research, UCLA

EDUCATION

B.S., 1974 Nuclear Engineering, London University, UK

Ph.D., 1978 Applied Physics, Hull University, UK

AWARDS

IEEE Particle Accelerator Science and Technology Award 2009

Advanced Accelerator Concepts Award 2008

James Clerk Maxwell Prize, APS 2006

USPAS Prize for Achievement in  
 Accelerator Physics and Technology 1997

Excellence in Plasma Physics Research Award, APS 1996

Queen Mary College Prize, Institute of Nuclear Engineers UK 1974

HONORS

Visiting Professor: Imperial College, London University 2010-

Included in *Engines of Discovery: A Century of  
 Particle Accelerators* 2007

APS Distinguished Lecturer in Plasma Physics 2001-02

APS Centennial Speaker 1999

Fellow, Institute of Physics, UK 1998

Best Invited Paper Award, Gordon Conference on Nonlinear  
 Optics and Lasers 1997

Physics News 1993, 2001, 2003

Fellow, IEEE 1993

Fellow, American Physical Society 1990

## SIGNIFICANT PUBLIC LECTURES

John Lawson Memorial Lecture, Rutherford Lab	Oct. 2009
Distinguished Speaker in Plasma Science and Technology, Princeton University	Nov. 2007
Sir John Adams Memorial Lecture, CERN	Dec. 2007

## EDITORIAL ACTIVITIES

Associate Editor, <i>New Journal of Physics</i>	2010-
Associate Editor, <i>Journal of Plasma Physics</i>	2009-
Guest Co-Editor, <i>New Journal of Physics</i> , <i>Focus Issue on Laser and Beam-Driven Plasma Accelerators</i>	December 2009
Associate Editor, <i>Reviews of Modern Physics</i>	2002-2005
Editorial Board, <i>Physical Review Special Topics-Accelerators and Beams</i>	1998-2001
Editor, <i>Advanced Accelerator Concepts, Lake Arrowhead, CA</i> AIP Conference Proceedings No. 193	1989
Co-Editor, <i>Laser Acceleration of Particle, Malibu, CA</i> , AIP Conference Proceedings No. 130	1985

## TWELVE MOST CITED PUBLICATIONS (H-Index: 41, ISI Web of Science)

1. A. Modena, Z. Najmudin, A. E. Dangor, C. E. Clayton, K. A. Marsh, C. Joshi, V. Malka, C. B. Darrow, C. Danson, D. Neely and F. N. Walsh, "Electron Acceleration From the Breaking of Relativistic Plasma Waves," *Nature* **377**, 606-608 (October, 1995).
2. C. E. Clayton, K. A. Marsh, A. Dyson, M. Everett, A. Lal, W. P. Leemans, R. Williams, and C. Joshi, "Ultra-high Gradient Acceleration of Injected Electrons by Laser-Excited Relativistic Electron Plasma Waves," *Physical Review Letters* **70**, 37, January 1993.
3. K. Wharton, S. Hatchett, S. Wilks, M. Key, J. Moody, V. Yanvosksy, A. A. Offenberger, B. Hammel and M. Perry, and C. Joshi "Experimental Measurements of Hot Electrons Generated by Ultra-Intense ( $>10^{19}$  W/cm<sup>2</sup>) Laser-Plasma Interactions on Solid Density Targets," *Physical Review Letters* **81**, pp. 822-825, July (1998).
4. C. Joshi, W. Mori, T. Katsouleas, and J. M. Dawson, "Ultra High Gradient Particle Acceleration by Intense Laser-Driven Plasma Density Waves," *Nature* **311-5896**: 525-529 (1984).
5. D. W. Forslund, J. M. Kindel, W. Mori, C. Joshi, and J. M. Dawson, "Two Dimensional Simulations of Single Frequency and Beat Wave Laser-Plasma Heating," *Phys. Rev. Lett.* **54** (6), 558-561 (1985).
6. D. Gordon, K.C. Tzeng, C.E. Clayton, A.E. Dangor, V. Malka, K.A. Marsh, A. Modena, W.B. Mori, P. Muggli, Z. Najmudin, and C. Joshi, "Observation of Electron Energies Beyond the Linear Dephasing Limit from a Laser Excited Relativistic Plasma Wave," *Phys. Rev. Lett.* **80**, 2133-2136, March (1998).
7. C. E. Clayton, C. Joshi, C. Darrow, and D. Umstadter, "Relativistic Plasma-Wave Excitation by Collinear Optical Mixing," *Phys. Rev. Lett.* **54**, 21:2343-2346 (1985).
8. C. A. Coverdale, C.B. Darrow, C.D. Decker, W.B. Mori, Tzeng, K-C., K.A. Marsh, C. E. Clayton, and C. Joshi, "Propagation of Intense Subpicosecond Laser Pulses through Underdense Plasmas," *Physical Review Letters* **74**, 4659 (1995).
9. W. B. Mori, C. Joshi, J. M. Dawson, D. W. Forslund, and J. M. Kindel, "Evolution of Self-focusing of Intense Electromagnetic Waves in a Plasma," *Phys. Rev. Lett.* **60**, 1298, March (1988).
10. C. Joshi, T. Tajima, J. M. Dawson, H. A. Baldis, and N. A. Ebrahim, "Forward Raman Instability and Electron Acceleration" *Phys. Rev. Lett.* **47-18**, 1285-1288 (1981).
11. W. P. Leemans, C. Joshi, W. B. Mori, C. E. Clayton, and T.W. Johnston, "Nonlinear Dynamics of Driven Relativistic Electron Plasma Waves," *Phys. Rev. A* **46(8)**, 5112-5122, October (1992).

12. I. Blumenfeld, C. E. Clayton, F.-J. Decker, M.J. Hogan, C. Huang, R. Ischebeck, R. Iverson, C. Joshi, T. Katsouleas, N. Kirby, W. Lu, K. A. Marsh, W. B. Mori, P. Muggli, E. Oz, R. H. Siemann, D. Walz, and M. Zhou, "Energy Doubling of 42 GeV Electrons in a Metre Scale Plasma Wakefield Accelerator," Nature, Vol. 445, 741 (2007).

## **PUBLICATIONS: C. Joshi**

### **2012**

#### **Journals**

379. C. Joshi and A. Caldwell, "Plasma Accelerators," Handbook for Elementary Particle Physics, Volume III, edited by S. Myers and H. Schopper, accepted for publication.
378. F. Tsung, S. Ya. Tochitsky, D. J. Haberberger, W. B. Mori, and C. Joshi, "CO<sub>2</sub> Laser Acceleration of Forward Directed MeV Proton Beams in a Gas Target at Critical Plasma Density," Journal of Plasma Physics, accepted for publication.
377. N. Lemos, J. L. Martins, J. M. Dias, K. A. Marsh, A. Pak, and C. Joshi, "Forward Directed Ion-Acceleration in a LWFA with Ionization-Induced Injection" Journal of Plasma Physics, doi:10.1017/S0022377811000602.
376. D. Haberberger, S. Tochitsky, F. Fiuza, C. Gong, R. A. Fonseca, L. O. Silva, W. B. Mori, and C. Joshi, "Collisionless shocks in laser-produced plasma generate monoenergetic high-energy proton beams," Nature Physics 8, 95-99 (January 2012).

### **2011**

#### **Journals**

375. 374. B. B. Pollock, C. E. Clayton, J. E. Ralph, F. Albert, A. Davidson, L. Divol, C. Filip, S. H. Glenzer, K. Herpoldt, W. Lu, K. A. Marsh, J. Meinecke, W. B. Mori, A. Pak, T. C. Rensink, J. S. Ross, J. Shaw, G. R. Tynan, C. Joshi, and D. H. Froula, "Demonstration of a Narrow Energy Spread, ~0.5 GeV Electron Beam from a Two-Stage Laser Wakefield Accelerator," Physical Review Letters Vol. 107, 045001 (July, 2011).
373. R. K. Kirkwood, P. Michel, R. London, J. D. Moody, E. Dewald, L. Yin, J. Kline, D. Hinkel, D. Callahan, N. Meezan, E. Williams, L. Divol, B. L. Albright, K. J. Bowers, E. Bond, H. Rose, Y. Ping, T. L. Wang, C. Joshi, W. Seka, N. J. Fisch, D. Turnbull, S. Suckewer, J. S. Wurtele, S. Glenzer, L. Suter, C. Haynam, O. Landen, and B. J. Macgowan, "Multi-beam Effects on Backscatter and its Saturation in Experiments with Conditions Relevant to Ignition," Phys. Plasmas Vol. 18, 056311 (May, 2011).
372. R. K. Kirkwood, Y. Ping, S. C. Wilks, N. Meezan, P. Michel, E. Williams, D. Clark, L. Suter, O. Landen, N.J. Fisch, E. O. Valeo, V. Malkin, D. Turnbull, S. Suckewer, J. Wurtele, T. L. Wang, S. F. Martins, C. Joshi, L. Yin, B. J. Albright, H.A. Rose, and K.J. Bowers, "Observation of amplification of light by Langmuir waves and its saturation on the electron kinetic timescale," Journal of Plasma Physics Vol. 77(4), pp. 521-528 August 2011.

371. M. Hogan, C. Joshi, and P. Muggli, "FACET Shows the Way in Accelerator Research," CERN Courier, March 2011 pp. 23-26.

## 2011

### Conferences

370. A. W. Davidson, W. Lu, C. Joshi, L. O. Silva, J. Martins, R. A. Fonseca, and W. B. Mori, "Numerical Study of Self and Controlled Injection in 3-Dimensional Laser-Driven Wakefields," Proceedings of 2011 Particle Accelerator Conference, New York, NY, March 28-April 1, 2011.
369. B. B. Pollock, G. R. Tynan, F. Albert, C. Filip, S. H. Glenzer, J. Meinecke, A. Pak, J. E. Ralph, C. E. Clayton, C. Joshi, K. A. Marsh, J. Shaw, K. L. Herpoldt, and D. H. Froula, "The Effects of a Density Mismatch in a Two-Stage LWFA," Proceedings of 2011 Particle Accelerator Conference, New York, NY, March 28-April 1, 2011.
368. D. Haberberger, S. Tochitsky, C. Gong, and C. Joshi, "Production of 25 MeV Protons in CO<sub>2</sub> Laser-Plasma Interactions in a Gas Jet," Proceedings of 2011 Particle Accelerator Conference, New York, NY, March 28-April 1, 2011.
367. G. Xia, A. Caldwell, K. Lotov, A. Pukhov, R. Assmann, F. Zimmermann, C. Huang, J. Vieira, N. Lopes, R. A. Fonseca, L. O. Silva, W. An, C. Joshi, W. Mori, W. Lu, and P. Muggli, "A Proposed Experimental Test of Proton-Driven Plasma Wakefield Acceleration Based on CERN SPS," Proceedings of 2011 Particle Accelerator Conference, New York, NY, March 28-April 1, 2011.
366. K. A. Marsh, C. E. Clayton, C. Joshi, W. Lu, W. B. Mori, A. Pak, L. O. Silva, N. Lemos, R. A. Fonseca, F. Albert, T. Doepfner, C. Filip, S. H. Glenzer, D. Price, J. Ralph, and B. B. Pollock, "Laser Wakefield Acceleration Beyond 1 GeV Using Ionization Induced Injection," Proceedings of 2011 Particle Accelerator Conference, New York, NY, March 28-April 1, 2011.
365. S. Ya. Tochitsky, F. Tsung, D. J. Haberberger, W. B. Mori, and C. Joshi, "Enhanced Laser-Driven Ion Acceleration via Forward Raman Scattering in a Ramped Gas Target," Proceedings of 2011 Particle Accelerator Conference, New York, NY, March 28-April 1, 2011.
364. S. Ya. Tochitsky, D. J. Haberberger, and C. Joshi, "Development of Picosecond CO<sub>2</sub> Laser Driver for an MeV Ion Source," Proceedings of 2011 Particle Accelerator Conference, New York, NY, March 28-April 1, 2011.
363. R. J. England, J. Frederico, M. J. Hogan, C. Joshi, W. An, W. Lu, W. Mori, and P. Muggli, "A High Transformer Ratio Plasma Wakefield Accelerator Scheme for FACET," Proceedings of 2011 Particle Accelerator Conference, New York, NY, March 28-April 1, 2011.

## **2010**

### **Journals**

362. D. Haberberger, S. Tochitsky, and C. Joshi. "Fifteen Terawatt Picosecond CO<sub>2</sub> Laser System," Optics Express, 18(17):17865-17875, 2010.
361. C. E. Clayton, J. E. Ralph, F. Albert, R.A. Fonseca, S. H. Glenzer, C. Joshi, W. Lu, K. A. Marsh, S. F. Martins, W. B. Mori, A. Pak, F. S. Tsung, B. B. Pollock, J. S. Ross, L. O. Silva, and D. H. Froula, "Self-Guided Laser Wakefield Acceleration beyond 1 GeV Using Ionization-Induced Injection," Physical Review Letters, Vol. 105, 105003, September (2010).
360. C. Joshi and V. Malka, Editorial: Focus on Laser- and Beam-Driven Plasma Accelerators," New Journal of Physics Vol. 12 p. 045003 (2010).
359. M. J. Hogan, T. O. Raubenheimer, A. Seryi, P. Muggli, T. Katsouleas, C. Huang, W. Lu, W. An, K. A. Marsh, W. B. Mori, C. E. Clayton, and C. Joshi, "Plasma wakefield acceleration experiments at FACET," New Journal of Physics Vol. 12 p. 055030 (2010).
358. W. Lu, W. An, M. Zhou, C. Joshi, C. Huang, and W. B. Mori, "The optimum plasma density for plasma wakefield excitation in the blowout regime," New Journal of Physics Vol. 12 p. 085002 (2010).
357. P. Muggli, I. Blumenfeld, C. E. Clayton, F.J. Decker, M.J. Hogan, C. Huang, R. Ischebeck, R. H. Iverson, C. Joshi, T. Katsouleas, N. Kirby, W. Lu, K.A. Marsh, W. B. Mori, E. Oz, R. H. Siemann, D. R. Walz, and M. Zhou, "Energy gain scaling with plasma length and density in the plasma wakefield accelerator," New Journal of Physics Vol. 12 p. 045022 (2010).
356. I. Blumenfeld, C.E. Clayton, F. J. Decker, M. J. Hogan, C. Huang, R. Ischebeck, R. H. Iverson, C. Joshi, T. Katsouleas, N. Kirby, W. Lu, K. A. Marsh, W. B. Mori, P. Muggli, E. Oz, R.H. Siemann, D. R. Walz, and M. Zhou, "Scaling of the Longitudinal Electric Field and Transformer Ratio in a non-linear Plasma Wakefield Accelerator," Physical Review Special Topics – Accelerator and Beams 13, 111301(2010).
355. F. Fiuza, L. O. Silva, and C Joshi, "High-brilliance synchrotron radiation induced by the plasma magnetic mode," Physical Review Special Topics: Accelerators and Beams 13, 080701 (2010).
354. C. Joshi, "How lasers cast a light on accelerator science," CERN Courier, Vol. 50, December (2010).
353. J. E. Ralph, C. E. Clayton, F. Albert, B. B. Pollock, S. F. Martins, A. E. Pak, K.A. Marsh, J. L. Shaw, A. Till, J. P. Palastro, W. Lu, S. H. Glenzer, L. O. Silva, W. B. Mori, C. Joshi, and D. H. Froula, "Laser wakefield acceleration at reduced density in the self-guided regime," Physics of Plasmas, Vol. 17, 056709 (2010).
352. Pak A., Marsh K.A., Martins S.F., Lu W., Mori W.B., Joshi C., "Injection and trapping of tunnel-ionized electrons into laser-produced wakes," Physical Review Letters, Vol. 104, 025003 (January 2010).

## **Conferences**

351. W. An, W. Lu, C. Joshi, W. B. Mori, C. Huang, M. J. Hogan, S. F. Martins, and L. O. Silva, "Simulations of Plasma Wake Field Accelerator experiments at FACET," Proceedings of the Advanced Accelerator Concepts Workshop, Annapolis, MD, June 13-19, 2010.
350. D. Haberberger, S. Tochitsky, C. Gong, and C. Joshi, "Production of Multi-Terawatt Time-Structured CO<sub>2</sub> Laser Pulses for Ion Acceleration," Proceedings of the Advanced Accelerator Concepts Workshop, Annapolis, MD, June 13-19, 2010.
349. S. Tochitsky, P. Musumeci, J.B. Rosenzweig, C. Joshi, and S.C. Gottschalk, "Seeded FEL Microbunching Experiments at the UCLA Neptune Laboratory," Proceedings of the Advanced Accelerator Concepts Workshop, Annapolis, MD, June 13-19, 2010.
348. G. Xia et al., Update on proton driven plasma wakefield acceleration," Proceedings of the Advanced Accelerator Concepts Workshop, Annapolis, MD, June 13-19, 2010.
347. C. Joshi, C. Clayton, D. Froula, K. Marsh, A. Pak, and J. Ralph, "Acceleration of electrons by a laser wakefield accelerator (LWFA) operating in the self-guided regime," Proceedings of Frontiers in Optics, Rochester, NY, October 24-28, 2010.

## **2009**

### **Journals**

346. S. Trubnick, S. Tochitsky and C. Joshi, "Fabrication and characterization of teflon bonded periodic GaAs structures for THz generation," Optics Express 17 (4), 2385 February (2009).
345. F. Fang, C.E. Clayton, K. A. Marsh, A. E. Pak, J. E. Ralph, N. C. Lopes, C. Joshi, "Pump Depletion Limited Evolution of the Relativistic Plasma Wave-Front in a Forced Laser-Wakefield Accelerator," Plasma Phys. Control. Fusion 51, 024003(2009).
344. J. E. Ralph, K.A. Marsh, A. E. Pak, W. Lu, W. B. Mori, F. Fang, C.E. Clayton, T. L. Wang and C. Joshi, "Self-Guiding of Ultra-short, Relativistically Intense Laser Pulses through Underdense Plasmas in the Blowout Regime," Physical Review Letters 102 (17), 175003 (May 2009).
343. X. Wang, P. Muggli, T. Katsouleas, C. Joshi, W B. Mori, R. Ischebeck, M. J. Hogan, "Optimization of Positron Trapping and Acceleration in an Electron-beam-driven Plasma Wakefield Accelerator," Physical Review Special Topics-AB, 12(5), 051303 (May 2009).
342. S. Ya. Tochitsky, O.B. Williams, P. Musumeci, C. Sung, D. J. Haberberger, A. M. Cook, J. B. Rosenzweig, and C. Joshi, "Efficient Harmonic Microbunching in a 7<sup>th</sup> Order Inverse-Free-Electron Laser Interaction," Physical Review Special Topics-AB, 12(5), 050703 (May 2009).

341. C. Joshi, "Surfing Plasma Waves: A New Paradigm for Particle Accelerators," Plasma and Fusion Research: Review Articles, Vol. 4, 045 (2009).
340. N. Kirby, I. Blumenfeld, C. E. Clayton, F.J. Decker, M.J. Decker, M. Hogan, C. Huang, R. Ischebeck, R. H. Iverson, C. Joshi, T. Katsouleas, W. Lu, K.A. Marsh, S. Martins, W.B. Mori, P. Muggli, E. Oz, R.H. Siemann, D. R. Walz, and M. Zhou, "Transverse Emittance and Current of Multi-GeV Trapped Electrons in a Plasma Wakefield Acceleration," Physical Review Special Topics-AB, 12 (5) 053101 May (2009).
339. Y. Ping, R. K. Kirkwood, T.-L. Wang, D. S. Clark, S. C. Wilks, N. Meezan, R. L. Berger, J. Wurtele, N.J. Fisch, V. M. Malkin, E. J. Valeo, S. F. Martins, and C. Joshi, "Development of a nanosecond-laser-pumped Raman amplifier for short laser pulses in plasmas," Physics of Plasmas, Vol. 16, 123113 (2009).
338. Froula D.H., Clayton C.E., Doppner T., Fonseca R.A., Marsh K.A., Barty C.J., Divol L., Glenzer S.H., Joshi C., Lu W., Martins S.F., Michel P., Mori W.B., Palastro J.P., Pollock B.B., Pak A., Ralph J.E., Ross J.S., Siders C., Silva L.O., Wang T., "Measurements of the critical power for self-injection of electrons in a laser wakefield Accelerator," Physical Review Letters, Vol. 103, 215006 (November, 2009).

## Conferences

337. Martins, J., Fonseca, R.A., Martins, S., Silva, L.O., Joshi, C., Mori, W.B., "Emission of collimated x-ray radiation in laser-wakefield experiments using particle tracking in PIC simulations", Proceedings of the Particle Accelerator Conference, Vancouver, B.C., May 4-8, (2009) pp.1-3
336. Pak, A., Joshi, C., Marsh, K.A., Martins, S.F., Mori, W.B., "Investigation of Ionization Induced Trapping in a Laser Wakefield Accelerator," Proceedings of the Particle Accelerator Conference, Vancouver, B.C., May 4-8, (2009) pp. 1-3.
335. Lu, W., An, W., Huang, C., Joshi, C., Mori, W.B., Hogan, M. Raubenheimer, T., Seryi, A., "High transformer ratio PWFA for application on XFELs", Proceedings of the Particle Accelerator Conference, Vancouver, B.C., May 4-8, (2009) pp.1-3.
334. Huang, C., An, W., Clayton, C., Joshi, C., Lu, W., Marsh, K., Mori, W.B., Tzoufras, M., Katsouleas, T., Blumenfeld, I., Hogan, M., Kirby, N., Raubenheimer, T., Seryi, A., Muggli, P., "Simulations of 25 GeV PWFA sections: path towards a PWFA linear collider", Proceedings of the Particle Accelerator Conference, Vancouver, B.C., May 4-8, (2009) pp.1-3.
333. Seryi, A., Hogan, M., Pei, S., Raubenheimer, T., Tenenbaum, P., Katsouleas, T., Huang, C., Joshi, C., Mori, W.B., Muggli, P., "A concept of plasma wake field acceleration linear collider (PWFA-LC)", Proceedings of the Particle Accelerator Conference, Vancouver, B.C., May 4-8, (2009) pp.1-3.
332. D. Haberberger, C. Joshi, K. Marsh, A. Pak, S. Tochitsky, "Proton Acceleration in CO<sub>2</sub> Laser-Plasma Interactions at Critical Density," Proceedings of the Particle Accelerator Conference, Vancouver, B.C., May 4-8, (2009) pp.1-3.

331. S. Tochitsky, A. Cook, D. Haberberger, C. Joshi, P. Musumeci, J. Rosenzweig, C. Sung, O. Williams, "Demonstration of efficient electron-radiation interaction in a 7<sup>th</sup> harmonic IFEL," Proceedings of the Particle Accelerator Conference, Vancouver, B.C., May 4-8, (2009) pp.1-3.
330. B. B. Pollock, J.S. Ross, G. R. Tynan, L. Divol, S. H. Glenzer, V. Leurent, J. P. Palastro, J.E. Ralph, D.H. Froula, C. E. Clayton, K.A. Marsh, A. E. Pak, T.L. Wang, C. Joshi, "Two-screen method for determining electron beam energy and deflection from laser wakefield acceleration," Proceedings of the Particle Accelerator Conference, Vancouver, B.C., May 4-8, (2009) pp.1-3.

## **2008**

### **Journals**

329. P. Muggli, B. E. Blue, C.E. Clayton, F.J. Decker, M.J. Hogan, C. Huang, C. Joshi, T. C. Katsouleas, W. Lu, W. B. Mori, C. L. O'Connell, R. H. Siemann, D. Walz, and M. Zhou, "Halo formation and emittance growth of positron beams in plasmas," Physical Review Letters, Vol. 101, 055001, August (2008).
328. X. Wang, R. Ischebeck, P. Muggli, T. Katsouleas, C. Joshi, W.B. Mori, and M.J. Hogan, "Positron Injection and Acceleration on the Wake Driven by an Electron Beam in a Foil-and-Gas Plasma," Physical Review Letters, Vol. 101, 124801, September (2008).

### **Conferences**

327. C. DesRosiers, V. Moskvina, M. Cao, C. J. Joshi, M. Langer, "Laser-plasma generated very high energy electron in radiation therapy of the prostate," Proceedings of the SPIE 2008 Conference, San Jose, CA January 2008.
326. S. Ya. Tochitsky et al. "Seeded FEL Amplifier-Buncher in the 0.5-9 THz for Advanced Accelerators," Proceedings of the 13<sup>th</sup> Advanced Accelerator Concepts Workshop, Santa Cruz, CA, July 27-Aug. 2, 2008.
325. S. Tochitsky et al. "Femtosecond Microbunching of Electron Beam in a 7th Harmonic Coupled IFEL," Proceedings of the 13<sup>th</sup> Advanced Accelerator Concepts Workshop, Santa Cruz, CA, July 27-Aug. 2, 2008.
324. A. E. Pak et al., "Indication of Local Laser Pump Depletion via Transmitted Self-Guided Laser Light," Proceedings of the 13<sup>th</sup> Advanced Accelerator Concepts Workshop, Santa Cruz, CA, July 27-Aug. 2, 2008.
323. V. Leurent et al., "Measurement of X-Ray Betatron Radiation from a Laser Wakefield Accelerator," Proceedings of the 13<sup>th</sup> Advanced Accelerator Concepts Workshop, Santa Cruz, CA, July 27-Aug. 2, 2008.



322. N. Kirby et al. "Emittance and Current of Electrons Trapped in a Plasma Wakefield Accelerator," Proceedings of the 13<sup>th</sup> Advanced Accelerator Concepts Workshop, Santa Cruz, CA, July 27-Aug. 2, 2008.
321. I. Blumenfeld et al. "Measurement of the Decelerating Wake in a Plasma Wakefield Accelerator," Proceedings of the 13<sup>th</sup> Advanced Accelerator Concepts Workshop, Santa Cruz, CA, July 27-Aug. 2, 2008.
320. X. Wang et al., "Threshold for Trapping Positrons in the Wake Driven by an Ultra-relativistic Electron Bunch," Proceedings of the 13<sup>th</sup> Advanced Accelerator Concepts Workshop, Santa Cruz, CA, July 27-Aug. 2, 2008.
319. S. R. Nagel, S. P. D. Mangles, P. M. Nilson, M. C. Kaluza, A. G. R. Thomas, L. Willingale, Z. Najmudin, A. E. Dangor, K. Krushelnick, R.J. Clarke, N. Lopes, K. Marsh, and C. Joshi, "Electron acceleration from underdense plasma with the Vulcan Petawatt Laser," High Power Laser Science, 2005/2006 Central Laser Facility Annual Report, p. 44-46.

## 2007

### Journals

318. I. Blumenfeld, C. E. Clayton, F-J. Decker, M.J. Hogan, C. Huang, R. Ischebeck, R. Iverson, C. Joshi, T. Katsouleas, N. Kirby, W. Lu, K. A. Marsh, W. B. Mori, P. Muggli, E. Oz, R. H. Siemann, D. Walz, and M. Zhou, "Energy Doubling of 42 GeV Electrons in a Metre Scale Plasma Wakefield Accelerator," Nature, Vol. 445, 741 (2007).
317. E. Oz, S. Deng, T. Katsouleas, P. Muggli, C. D. Barnes, I. Blumenfeld, F. J. Decker, P. Emma, M. J. Hogan, R. Ischebeck, R. H. Iverson, N. Kirby, P. Krejcik, C. O'Connell, R. H. Siemann, D. Walz, and D. Auerbach, C. E. Clayton, C. Huang, D. K. Johnson, C. Joshi, W. Lu, K. A. Marsh, W. B. Mori, M. Zhou, "Ionization-Induced Electron Trapping in Ultra-relativistic Plasma Wakes," Physical Review Letters 98, 084801(2007).
316. W. Lu, M. Tzoufras, C. Joshi, F. S. Tsung, W. B. Mori, J. Vieira, R. A. Fonseca, and L. O. Silva, "Generating multi-GeV electron bunches using single stage laser wakefield acceleration in a 3D nonlinear regime," Phys. Rev. ST Accel. Beams 10, 061301:1-12 (2007).
315. C. Joshi, "The development of laser- and beam-driven plasma accelerators as an experimental field," Review Paper, Physics of Plasmas 14, 055301 (2007).
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