

Education

- **University of Southern California** Los Angeles, CA
Ph.Dc., Physics *expected summer 2007*
 - Advisor: Thomas C. Katsouleas, Electrical Engineering Electrophysics Department
Dissertation Title: Physics of electron trapping in Plasma Wake Field Accelerators
 - Relevant courses: Quantum Mechanics, Electrodynamics, Statistics, Optics, Non-linear Optics, Plasma Physics, Computational Physics
- **Bilkent University** Ankara, Turkey
B.S. Physics *2000*
 - Graduated with Honors
 - Relevant courses: Solid-state physics, Quantum Mechanics, Quantum Electronics, Optics, Electrodynamics, Electronics

GRADUATE RESEARCH AND TEACHING EXPERIENCE

- **USC EE-EP** 2001 - 2007
Research Assistant at University of Southern California Electrical Engineering Electrophysics
- **SLAC** 2002 - 2006
E164, E164X, E167 Plasma Wake Field Experiments at Stanford Linear Accelerator Center (SLAC)
- **UCLA** 2001 - 2002
THz Cherenkov radiation experiment from a magnetized plasma University of California Los Angeles (UCLA) Neptune Lab

UNDERGRADUATE RESEARCH EXPERIENCE

- **Senior Project** Bilkent
Analytical Study of Super Conductivity in Mesoscopic Systems 1999-2000
- **Senior Project** Bilkent
experimental Study of temperature dependence of V-I curve of semiconductors 1999-2000
- **Class Project** Bilkent
Simulation of Evolution of Wave Packets 1998-1999
- **Class Project** Bilkent
Analog Amplifier and Power supply design 1997-1998

LABAROTORY SKILLS

- **Gated Intensified Camera and Optical Imaging Spectrograph:**
 - Temperature and density characterization of a high density laser ionized plasma in the nanosecond regime, characterization of a sub-picosecond beams and plasma wave structures from optical transition radiation.
- **Optical Diagnostics:**
 - Cherenkov, OTR and phosphor based imaging of electron beams.
- **Ultra-high vacuum:**
 - Ion pumps, turbo pumps, ion gauges, leak checking, etc.
- **Lasers:**
 - Operated a 193 nm ArF excimer laser for plasma production at SLAC and UCLA.
- **Infrared:**
 - Pyroelectric detectors, Golay Cells.
- **Certifications:**
 - Department of Energy Radiological Worker II, Stanford Linear Accelerator Center class IV laser Operator
- **Control systems:**
 - LabVIEW
- **Miscellaneous:**
 - Electronics, drafting, machining, mechanical fabrication and repair.

COMPUTER SKILLS

- **Operating systems:**
 - Working knowledge of UNIX, MacOS, Windows NT/2000/XP, DOS, etc.
- **Software:**
 - MS Office (Word, Excel and PowerPoint), MATLAB, Adobe Photoshop, Adobe Illustrator, Kaleidagraph, Adobe Premiere, Adobe Acrobat, etc.
- **Languages:**
 - FORTRAN, MATLAB,LATEX.

PUBLICATIONS

● **Journal Articles(First Author):**

- Ionization-Induced Electron Trapping in Ultrarelativistic Plasma Wakes (Phys. Rev. Lett.98, 084801 (2007))
- High Brightness Transformer using a Plasma Wake Field Accelerator (In preparation for Applied Physics Letters

● **Journal Articles (Co-author):**

- Energy doubling of 42 GeV electrons in a meter scale plasma wakefield accelerator (Nature 445, 741-744 (2007))
- Hose Instability and wake generation by an intense electron beam in a self-ionized gas (Phys Rev Lett. 2006 Feb 3;96)
- Field Ionization of a Neutral Lithium Vapor using a 28.5 GeV electron Beam, (Phys. Rev. ST Accel. Beams 9, 101301 (2006))
- Positron Production by X Rays Emitted by Betatron Motion in a Plasma Wiggler (Phys. Rev. Lett. 97, 175003 (2006))
- Multi-GeV Energy Gain in a Plasma Wakefield Accelerator (Phys. Rev. Let. 95, 054802 (2005), Nature Physics Aug 4, 2005)
- Plasma wakefield acceleration in self-ionized gas or plasmas (Phys. Rev. E 68, 047401 (2003))

● **Conference Proceedings (First Author):**

- Field Ionization as a Plasma Source for the Plasma Wakefield Accelerator (Advanced Accelerator Conference (AAC) 2002)
- Optical Diagnostics for Plasma Wakefield Accelerators (The American Institute of Physics (AIP) Conf. Proc. 737, 708 (2004)
- Plasma Dark Current in Self Ionized Plasma Wake Field Accelerators (Particle Accelerator Conference (PAC) Conf. Proc. 737, 708 (2005))
- Plasma wakefield acceleration in self-ionized gas or plasmas (Phys. Rev. E 68, 047401 (2003))

SELECTED PRESENTATIONS

- Plasma Light diagnostic for PWFA at SLAC 31st IEEE International Conference On Plasma Science June 28 -July 1, 2004 Baltimore, Maryland by Plasma Science and Applications Committee IEEE Nuclear and Plasma Sciences Society
- Plasma Light Diagnostic for the PWFA at SLAC American Physical Society (APS) 45th Annual Meeting of the Division of Plasma Physics (DPP) Albuquerque, New Mexico, October 27-31, 2003
- Plasma Light Diagnostic for the PWFA at SLAC, The 11th Advance Accelerator Concepts Workshop, June 21 - 26, 2004, Long Island New York by Stony Brook University and the Brookhaven National Laboratory's Accelerator Test Facility
- Plasma Light and Optical Diagnostics for Plasma Wakefield Accelerators 46th Annual Meeting of the Division of Plasma Physics November 15-19, 2004 Savannah, GA
- Plasma Dark Current in Self Ionized Plasma Wake Field Accelerators, 47th Annual Meeting of the Division of Plasma Physics October 24-28, 2005; Denver, Colorado

- Plasma Dark Current in Self Ionized Plasma Wake Field Accelerators, Particle Accelerator Conference May 16-20 2005, Knoxville Tennessee by the American Physical Society, the Institute of Electrical and Electronics Engineers, Inc., and the U.S. Department of Energy
- Plasma Dark Current in Self-ionized Plasma Wakefield Accelerators South Arch Beam Experimental Region (SABER) Workshop, Stanford Linear Accelerator Center Menlo Park California, March 15-16 2006
- Physics of particle trapping in Self Ionized Plasma Wake Field Accelerators, The 12th Advance Accelerator Concepts Workshop, July 10 - 15, 2006, Lake Geneva Wisconsin by Argonne Wakefield Accelerator Group and Northern Illinois University

SUMMER SCHOOLS

- United States Particle Accelerator School (USPAS) sponsored by the University of California, Santa Barbara, 2003

REFERENCES

- **Professor Thomas C. Katsouleas**
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- **Professor Chandrashekhar Joshi**
 UCLA Electrical Engineering
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