

Efthymios Kallos

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Career Objective

A full time position to apply my electrical engineering skills

Academic Interests

Applied Physics, Electromagnetics, Wireless & Satellite Communications, Optical Communications, Antennas, Waveguides, Photonics, Lasers

High Energy Physics, Particle Accelerators, Plasma-Based Electron-Beam Driven and Laser-driven Wakefield Accelerators, Radiation sources, FEL, Simulation Codes

Education

2005-now **Ph.D. in Electrical Engineering** (expected Aug 2008)
UNIVERSITY OF SOUTHERN CALIFORNIA (USC)
Los Angeles, CA
Thesis title: "Plasma Wakefield Accelerators using Multiple Electron Bunches". The work analyzes in detail through experiments, simulations and theory the possibility of utilizing multiple electron bunches in order to drive a next-generation plasma-based particle accelerator. 2 journal and 11 conference publications. 2 seminar talks. Teaching assistant in 3 courses. Advisor: Prof. Tom Katsouleas

2003-2005 **Master of Science in Electrical Engineering**
UNIVERSITY OF SOUTHERN CALIFORNIA
Los Angeles, CA
GPA: 3.85/4. Coursework and projects focused on advanced electromagnetic theory, Fourier optics, antennas, optical communications, semiconductor photonics, quantum mechanics and plasmas.

1998-2003 **Diploma in Electrical and Computer Engineering**
NATIONAL TECHNICAL UNIVERSITY OF ATHENS
Athens, Greece
GPA: 9.07/10 (Top 3%). 5 year program. Specialization on telecommunications. Thesis title: "Study of the Smith-Purcell effect in dielectric corrugated waveguides". Examined the interaction between electron beams and waveguides and modeled the propagation characteristics in Matlab. Advisor: Prof. Nikolaos Uzunoglu

Selected Other Projects

- **Biofuels:** Investigation of the potential of biofuels as a viable renewable energy source (2007)
- **Antennas:** Analysis of Yagi-Uda and Reflectors (2005)
- **Audio Design:** Design, development and fabrication of a 5.1 loudspeaker audio system. Presented at JBL (2004)
- **Photonics:** Development of Beam-Propagation numerical codes for photonic waveguides (2004)
- **Cosmology:** Evidence for dark matter overview (2007) & Gravitational lensing simulations (2003)

Professional Experience

2004-now **Guest Research Employee** – ATF
Upton, NY
BROOKHAVEN NATIONAL LABORATORY (BNL)
Design and analysis of experiments examining various advanced accelerator schemes using plasmas. Single and multiple electron bunch techniques were designed and tested. Experience on lasers (interferometry, IFEL), plasma sources and spectroscopic measurements & diagnostics.

2004-now **Research Assistant** – Plasma Accelerator Group
Los Angeles, CA
UNIVERSITY OF SOUTHERN CALIFORNIA
Data analysis of plasma wakefield experiments conducted at ATF. Development of numerical solvers in Matlab for systems of partial differential equations and beam-plasma interactions (themOsiris code). Theoretical analysis of efficiency enhancement techniques for advanced particle accelerators. 3D particle-in-cell simulations (Osiris code) of various plasma acceleration schemes.

2006-now **Research Collaborator** – Pulsed Power Laboratory
Los Angeles, CA
UNIVERSITY OF SOUTHERN CALIFORNIA
Design, construction, optimization and diagnostics of gas-filled capillary plasma sources. Examination of stability and time-dependence of plasma density.

2002-2003 **Undergraduate Research Assistant**
Athens, Greece
NATIONAL TECHNICAL UNIVERSITY OF ATHENS
Theoretical analysis and simulations of electromagnetic wave propagation in various dielectric and metal waveguides.

Honors and Awards

- **USC Full-time Research Scholarship (2004-2008)**
For research work on advanced accelerator projects supported by DoE grants. Covers tuition and living expenses (\$40,000/year).
- **IEEE Student Grant (2007)**
Awarded to select Ph.D. students to present their work at the Particle Accelerator Conference. Covers full expenses.
- **USPAS Sponsored Grant (2005)**
Awarded to graduate students in order to attend the annual particle accelerator school. Covers full expenses.
- **USC Departmental Teaching Assistantship (2003-2006)**
Awarded to Ph.D. students for aiding the teaching of electrical engineering classes.
- **HMS Award for Exceptional Performance (1995-1998)**
Awarded by the Hellenic Mathematical Society in the National Mathematics Competition (multiple times).