

Jun-Chieh (Jerry) Wang

University of Michigan

Electrical Engineering and Computer Science Department

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OBJECTIVE:

Research position where a solid background in plasma physics and research experience would be needed.

SUMMARY:

Highly motivated and enthusiastic young scientist with several years of teaching and research experience in theoretical and computational plasma-related fields. Excellent programming skills with FORTRAN and MATLAB language, and especially skilled at working under Linux.

NOTABLE ACCOMPLISHMENTS:

- Worked with *Hewlett Packard Research Labs* for micro-Dielectric Barrier Discharge (mDBD) and corona discharge simulation.
- Proposed a mechanism for pre-earthquake ionosphere phenomena and developed a 2D two-fluid plasma simulation code for demonstration of mechanism.
- We proposed a single mechanism, Microwave Plasma Confinement (MWPC), to achieve plasma confinement and ion heating.
- Worked with my advisor to demonstrate that the relativistic effect in electromagnetic (EM) cyclotron instability is more important than the classical mechanism.
- In the “NSC (National Science Council) undergraduate student research project”, we proposed a rudimentary theory of fractional harmonic resonance.
- Individually developed scripts for image processing and data visualization on a Linux platform.

ACADEMIC AND INDUSTRIAL EXPERIENCE:

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| 2011 | Research Associate , Commercial Print Engine Lab (HP Labs) <ul style="list-style-type: none">• Micro-Dielectric Barrier Discharge (mDBD) simulation.• Corona discharge simulation. |
| 2009 ~present | PhD (GSRA) , Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor <ul style="list-style-type: none">• Corona and Charge Roller simulation.• Micro-Dielectric Barrier Discharge (mDBD) simulation: current extraction and interaction.• Discharge-Based Pressure Sensor simulation. |
| 2008 ~ 2009 | Research Assistant , Plasma and Space Science Center, NCKU <ul style="list-style-type: none">• Proposed a possible mechanism to explain the Pre-earthquake phenomena.• Developed a 2D two-fluid plasma simulation code for demonstration of the mechanism. |
| 2006 ~ 2007 | Research Assistant , Department of Physics, NCKU <ul style="list-style-type: none">• Derived a theoretical model of Microwave Plasma Confinement (MWPC) which achieves plasma confinement and ion heating in a single mechanism. |

- Developed a code for solving a variable coefficient 2nd order wave equation which describes the wave and its instability behavior.

2004 ~ 2005

Teaching Assistant, Department of Physics, NCKU

- Performed physics experiments and gave lectures on the concepts.
- Assisted in grading tests.

2003 ~ 2004

Teaching Assistant, Department of Physics, NCKU

- Prepared course handouts for the Introduction to Plasma Physics class.
- Helped students to improve their understanding of plasma physics.
- Assisted in grading tests, term papers and term projects.

2004 ~

Editor, Sciscape.org

- Offered reports on the latest research and science news in Chinese to the public.

EDUCATION:

PhD, EECS Department, 2009 ~ present

University of Michigan, Ann Arbor, MI

Supervisor: Prof. Mark. J. Kushner Email: mjkush@umich.edu

M.S., Department of Physics, 2005

National Cheng Kung University (NCKU), Tainan, Taiwan.

B.S., Department of Physics, 2003

National Cheng Kung University (NCKU), Tainan, Taiwan.

PROGRAMMING SKILLS:

FORTRAN, MATLAB, Linux script.

AWARDS AND SCHOLARSHIPS:

Student Award Finalists, GEC, 2011

Best Paper Award Nomination, ISPC 20, 2011

Best Presentation Award, 1st Annual MIPSE Graduate Student Symposium, 2010

President's Award, 2002 (Ranking 2nd)

President's Award, 2001 (Ranking 3rd)

President's Award, 2000 (Ranking 3rd)

PUBLICATIONS:

- **“Characteristics of Independently Controlled rf Micro-Dielectric Barrier Discharge Array”**. [With N. Leoni, H. Birecki, O. Gila and M. J. Kushner. In preparation]
- **“Electron Current Extraction from rf Excited Micro-Dielectric Barrier Discharge”**. [With N. Leoni, H. Birecki, O. Gila and M. J. Kushner. In preparation]
- Wang, J.-C., Leoni, N., Birecki, H., Gila, O., Kushner, M. J., **“Electron Current from an RF Microdielectric Barrier Discharge”**, *IEEE Transaction on Plasma Science*, V39, I10 (2011).
- K. R. Chen, J. D. Huang, J. C. Wang, and Y. Y. Chen, **“Relativistic Electromagnetic Ion Cyclotron Instabilities”**, *Phys. Rev. E*, 71, p.036410 (2005).

CONFERENCE PROCEEDINGS AND PRESENTATIONS:

- Jun-Chieh Wang, Napoleon Leoni, Henryk Birecki, Omer Gila and Mark J. Kushner, “Characteristics of Arrays of Independently Controlled RF Micro-Dielectric Barrier discharges”, 64th Gaseous Electrons Conference (GEC), Salt Lake City, Utah, USA, Nov., 2011.
- Jun-Chieh Wang, Napoleon Leoni, Henryk Birecki, Omer Gila and Mark J. Kushner, “Numerical Simulations of Dielectric Barrier Discharges in a High Resolution Ion Head”, NIP27: International Conference on Digital Printing Technologies and Digital Fabrication 2011, Minneapolis, MN, USA, Oct., 2011.
- Jun-Chieh Wang, Napoleon Leoni, Henryk Birecki, Omer Gila and Mark J. Kushner, “Interaction of Multiple RF Micro-Dielectric Barrier Discharges”, 20th International Symposium on Plasma Chemistry (ISPC), Philadelphia, PA, USA, July, 2011.
- Jun-Chieh Wang, Napoleon Leoni, Henryk Birecki, Omer Gila and Mark J. Kushner, “Independently Controlled RF Micro-Dielectric Barrier Discharge Arrays”, 38th IEEE Interactional Conference on Plasma Science (ICOPS), Chicago, Illinois, USA, June, 2011.
- Jun-Chieh Wang, Napoleon Leoni, Henryk Birecki, Omer Gila and Mark J. Kushner, “Arrays of Independently Controlled RF Excited Micro-dielectric Barrier Discharges”, 6th International Workshop on Microplasmas (IWM), Paris, France, April, 2011.
- Jun-Chieh Wang, Napoleon Leoni, Henryk Birecki, Omer Gila and Mark J. Kushner, “Electron Current Extraction From RF Micro-Dielectric Barrier Discharges”, 57th American Vacuum Society International Symposium (AVS), Albuquerque, NM, USA, October, 2010.
- Jun-Chieh Wang, Napoleon Leoni, Omer Gila and Mark J. Kushner, “Extraction of Electron Current From Micro-Dielectric Barrier Discharges”, Gordon-Kenan Research Seminar on Plasma Processing Science (GKRS), New London, NH, USA, July, 2010.
- Jun-Chieh Wang, Napoleon Leoni, Henryk Birecki, Omer Gila, Eric Hanson and Mark J. Kushner, “Modeling of Micro-Dielectric Barrier Discharges”, 37th IEEE International Conference on Plasma Science (ICOPS), Norfolk, VA, USA, June, 2010.
- J. Y. Hsu and J. C. Wang, “Microwave Plasma Confinement and Ion Heating”, 49th Annual Meeting of the Division of Plasma Physics (APS-DPP), Florida, USA, 2007.
- J.C. Wang, R.D. Huang, Y.Y. Chen and K.R. Chen, “Relativistic electromagnetic ion cyclotron instabilities”, PSROC, Taiwan, 2004