Juliusz Aleksander Kruszelnicki

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EDUCATION

PhD in Nuclear Engineering and Scientific Computing, University of Michigan   **07.2015 – 05.2020**
- Computational Plasma Science and Engineering Group   Ann Arbor, MI
- Principal Investigator: Dr. Mark J. Kushner

Bachelor of Science in Nuclear Engineering, University of Florida   **08.2010 – 05.2015**
- **GPA**: 3.48/4.00   Gainesville, FL
- Honors Program Graduate
- Cum Laude Honors

EXPERIENCE

Undergraduate Research Assistant, Dr. Tulenko Laboratory University of Florida   **08.2014 – Present**
- Aided in development of innovative, accident tolerant, high thermal conductivity UO_2 fuel   Gainesville, FL
- Used Spark Plasma Sintering machine to fabricate 4.95% UO_2-Diamond composite fuel pellets (17x17 and 15x15) for irradiation in the Advanced Test reactor
- Carried out pellet analysis via x-ray diffraction, Raman spectroscopy, and scanning electron microscopy
- Executed CASMO 4E and Simulate3K simulation runs and analysis of mixed component fuels' reactor performance
- Lead the initiative to quantify the thermal effects of several dopants on UO_2
- Developed thermally/neutronically coupled modeling technique for doped, annular fission fuel

Intern, Tri Alpha Energy   **Summer of 2013**
- Modified implicit geometries and structures of the GENRAY.f plasma ray tracing code to allow open magnetic flux surface ray trajectories for Reverse Field Confinement device   Irvine, CA
- Compiled and analyzed data pertaining to ray propagation in the electron cyclotron range of frequencies Found means of maximizing intra-separatrix power deposition via Electron Bernstein Wave coupling mechanisms
- Designed, constructed and tested RFC DT reactor high vacuum chamber systems

Intern, Oculus Research   **08.2012 – 04.2013**
- Wrote MATLAB routines designed for retinal vascular structure analysis, as means of early illness detection and diagnosis   Gainesville, FL
- Helped port and scale existing MATLAB codes to platform independent language (C++)

Undergraduate Research Assistant, Dr. Yang Laboratory University of Florida   **08.2012 – 04.2013**
- Assisted in design, construction, and implementation of a fluid-based pressurized piping system intended for simulated PWR-environment ZrC cladding corrosion investigation   Gainesville, FL
- Performed microstructure analysis of 2 MeV proton irradiated, ultra-high purity ZrC, using transmission electron microscopy

Intern, Los Alamos National Laboratory   **Summer of 2012**
- Researched and derived methods for risk analysis of South Texas Nuclear Plant's spray/sump filtration systems via micro and macro structure deposit and hydraulic interaction analysis   Los Alamos, NM
- Structured MATLAB hydraulic sequences for the plant's limiting conditions of the sump and spray system, the filtration system flow, and the spray system cooling capacities

Intern, Los Alamos National Laboratory   **Summer of 2011**
- Researched means of kinematic characterization of explosives-propelled shrapnel via employment of self-developed computer-based synthetic radiography and analysis of experimental X-Ray imaging   Los Alamos, NM
- Created analytical means of 3-D object identification, elemental density assessment, and trajectory and kinetic energy calculation

LEADERSHIP & INVOLVEMENT

University Scholar, University of Florida   **2012-2015**
- Selected as an independent undergraduate research fund recipient for 2013 and 2014   Gainesville, FL
- Leads research and construction of an innovative, pulsed DD fusion reactor which utilizes a hybrid Inertial Electrostatic/Magnetic, pulsed confinement system of own design
- Optimized Focus Electrode Concept geometrics and energetics via a Schwartz-Christoffel ionic pathway and electromagnetic field analysis
- Designed, simulated, constructed and tested high voltage/high current pulsed power systems

President & Founder, Motorcycle Association of Students and Staff   **02.2011 - Present**
- Organized nation's largest collegiate motorcycle riding group   Gainesville, FL
- Lead riding skill development workshops, organized group events (up to 50 participants), set up a local network of vendor sponsors

SKILLS, ABILITIES & FURTHER EXPERIANCE

- **Coding Proficiency**: Mathematica, MCNP (X,5,6), MicroShield, MatLab, Simulink, C++, Fortran, HTML, SIMULATE3, CASMO4e, SCALE, ABAQUS, AutoCAD, EES
- **Honors:**
  - 2011 LANL Student Symposium Best in Engineering Presentation Award
  - 2013 University of Florida: University Scholar Award
  - 2013 University of Florida: Pagano Scholarship Recipient
  - 2014 University of Florida: University Scholar Award
  - 2014 ANS Landis Scholar
  - 2014 University of Florida: Pagano Scholarship Recipient
  - 2015 University of Florida: Pagano Scholarship Recipient
  - 2015 University of Florida: Jacobs Scholarship Recipient
  - 2014 WASET Conference: Best Student Presentation
  - 2014 ANS Fusion Energy Division: Outstanding Student Paper Award
  - 2015 ANS Student Conference: Best Undergraduate Paper Award
  - 2015 University of Florida Nuclear Engineering Student of the Year
  - 2015 National Science Foundation Graduate Fellowship Honorable Mention Recipient

- **Presentations & Publications**:
  - '*Kinematic Characterization of High-Velocity, Explosives-Propelled Objects via X-Ray Image Analysis*', **1st Author**, 2011 LANL Student Symposium;
  - '*Ray Tracing of Electron Bernstein Waves in 2D for C-2 Equilibrium*', **2nd Author**, 2013 APS Conference;
  - '*Inertial Electrostatic/Magnetic Confinement Hybrid Fusion Device*', **1st Author**, 2014 WASET Conference
  - '*Impact of Focusing Grid Electrodes and Pulsed Power on Modified IEC Fusion Device*', **1st Author**, 2014 ANS Conference
  - '*Property Analysis and Advanced Manufacturing Technique Development for Light Water Reactor Annular Composite Fuel*', **1st Author**, 2015 ANS Student Conference