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Kyle T. Rich

Technical Skills

Program.: MATLAB, Mathematica, Unix/Linux environment, LaTeX, Python*, R* (* some experience)

Comput.: Quantitative acoustic characterization, numerical simulations, Monte Carlo methods, instrument control, signal analysis, data processing and visulization, mathematical and statistical modeling

Stats.: regression, uncertainty propagation, correlation, distribution (KS test), parametric (Kruskal-Wallis) and non-parametric analyses of variance (ANOVA) and covariance (ANCOVA)

Experience

2009 – 2016 **Biomedical Acoustics Laboratory**, *Graduate Research Assistant*, University of Cincinnati.

- Ivestigated the role of acoustic cavitation during ultrasound-enhanced skin permeability (sonophoresis). Designed and implemented an in vitro sonophoresis apparatus for autonomous treatment and data aqusision, conducted spectral and statistical analyses (MATLAB and R)
- Developed theory, measurement and analysis techniques for standardized quantitative characterization of microbubble cavitation activity. Designed and implemented an autonomous measurement system for acoustic field mapping, conducted numerical and Monte Carlo simulations (MATLAB)
- Developed algorithms for signal processing and spectral analysis (MATLAB, Python), instrument control (MATLAB), data and statistical analyses (MATLAB, R), numerical and mathematical modeling and simulations (MATLAB, Mathematica)
- Experience presenting data-driven result to technical and non-technical audiences, and publishing results

2007 – 2008 **Solid State Physics Lab**, *Undergraduate Research Assistant*, Northern Kentucky Universtiy.

- Investigated the crystalline structure (WAXS) and electrical/magnetic properties of bulk-produced CoFe(x)O(y) (cobalt ferrite) composites for potential pressure sensors applications

Education

2016 **Ph.D. candidate**, ***Biomedical Engineering***, University of Cincinnati, Cincinnati, OH.

2008 **Bachelor of Science (B.Sc.)**, ***Physics***, Northern Kentucky University, Highland Heights, KY.

Academic Honors & Awards

2013 Editorial Assistantship: Ultrasound in Medicine and Biology

2011, 12 National Science Foundation, IGERT Traineeship, Biomembrane Research

2010 American Institute of Physics, Physical Acoustics Summer School Scholarship

Teaching and Leadership Experience

2013 **University of Cincinnati Student Chapter of the Acoustical Society of America**.

- Representative to National Committee

2008, 09, 10 **Teaching Assistant**, *University of Cincinnati*.

- Modeling and Analysis of Systems (BME 306) and Biomedical Instrumentation (BME 310)

2008 **Undergraduate Mentor and Teaching Assistant**, *Northern Kentucky University*.

- Introduction to Physics (PHY 110)

2007 **Northern Kentucky University Physics Students Club**.

- Vice President