Victor Klymko

Email: vklymko@yahoo.com   Web page: http://www.phy.olemiss.edu/~vick/

EXPERIENCE

Assistant Professor
Department of Physics and Astronomy, University of Mississippi   2010 – present
- Numerical simulation and experimental study of multidomain piezoelectric actuators in collaboration with a graduate student
- Teach General Physics, Physics for Engineering, and Introductory Astronomy
- Serve as instructor of record for the Laboratory Physics classes
- Outreach through monthly Astronomy Open House events

Instructor in Physics and Astronomy
Department of Physics and Astronomy, University of Mississippi   2009 – 2010
- Teach General Physics lectures
- Teach Laboratory Physics and Laboratory Astronomy
- Serve as instructor of record for the Laboratory Physics classes

Instructor in Physical Science
Northwest Mississippi Community College   2009 – 2010
- Teach Physical Science lectures and labs
- Prepare and organize the labs, order necessary equipment
- Develop extra credit curriculum to encourage the students

EDUCATION

Ph.D., Physics, University of Mississippi   2009
Dissertation: *Propagation of plate acoustic waves in Z-cut LiNbO$_3$: single crystal and periodically poled wafers.*

MS, Electrical Engineering, University of Mississippi   2004
Thesis: *Electric dyadic Green's functions for circular waveguide-based applications.*

MS, Radio-Physics and Electronics, Kharkiv National University, Ukraine   1996
Thesis: *Boundary value problem for multilayered dielectric waveguides.*

RESEARCH FUNDING AND EXPERIENCE

Summer Research Grant ($2600)
Graduate School, University of Mississippi   2008
- Fabrication and testing of an ultrasonic delay line based on $LiNbO_3$ wafer

Research Assistant
Department of Physics and Astronomy, University of Mississippi   2007
- Experimental study of the propagation of plate acoustic waves in single crystal and periodically poled $LiNbO_3$ wafers

Summer Research Grant ($2600)
Graduate School, University of Mississippi   2006
- Numerical simulation of plate acoustic waves in $LiNbO_3$ wavers using MATLAB

Research Assistant
Department of Physics and Astronomy, University of Mississippi   2005
- Development of a Finite Element FORTRAN code for different ferroelectric media

Research Assistant
Center for Applied Electromagnetic Research, University of Mississippi   2002-2004
- Derivation of Electric dyadic Green's function for spatial power combiners

RESEARCH PROJECTS

Numerical and experimental study of a multidomain piezoelectric actuator
- Numerical simulation of electromechanical response of actuators that contain inversely poled piezoelectric domains
- Teamwork with a graduate student to prepare the experimental samples and measure the electromechanical response of multidomain piezoelectric actuators

Dispersion of plate acoustic waves in multidomain ferroelectric plates
- Developed the Finite Element code for calculation of acoustical displacement in various ferroelectric, dielectric, and conducting media
- Simulated the propagation of acoustic waves in different single crystal and periodically poled ferroelectric wafers
- Experimentally confirmed the existence of stop bands for plate acoustic waves in periodically poled $LiNbO_3$ wavers

Electric dyadic Green's function for spatial power combiners
- Derived and tested the Green's function for circular perfectly conducting and "hard surface" waveguides
- Applied the Green's function in the Method of Moments routine to solve several waveguide excitation and scattering problems in the GHz frequency range
- Calculated electric and magnetic field distributions in the waveguide for several types of excitation

Numerical simulation of a dielectric transmission line
- Developed a Finite-Difference Time-Domain MATLAB code for a 2-strip dielectric transmission line
- Simulated excitation and propagation of a Gaussian pulse in the line
- Calculated velocities of the even and odd modes and the impedance

COMPUTER SKILLS

Programming languages: MATLAB, FORTRAN, HTML, C++
Operating systems: Windows, Mac OS, Linux (Ubuntu), Unix (Solaris)
Numerical methods: Moments, Finite Element, Finite-Difference Time-Domain
Software: Computational: Maple, Mathematica, Mathcad
Numerical simulation: ADS, HFSS, QuickWave
Visualization: Adobe Photoshop, Illustrator, Lightroom; Origin, Gnuplot
Astronomy: SkyGazer, TheSky, CCDOps, CCDSoft
Web: Adobe Dreamweaver, Adobe Fireworks
Productivity: Office, Google Documents

LANGUAGES: **Fluent:** English, Russian, Ukrainian **Some knowledge:** French

AFFILIATIONS: American Physical Society

PUBLICATIONS

1. I. V. Ostrovskii, A. B. Nadtochiy, **V. A. Klymko**, "**Velocity dispersion of plate acoustic waves in a multidomain phononic superlattice**," Phys. Rev. B, **82**(1) (2010).
2. I. V. Ostrovskii, **V. A. Klymko**, A. B. Nadtochiy, "**Observation of a phononic band gap in a periodically poled lithium niobate**," JASA-EL, **125**(4) (2009).
3. **V. A. Klymko**, A. B. Nadtochiy and I. V. Ostrovskii, "**Theoretical and experimental study of plate acoustic waves in ZX-cut lithium niobate**," IEEE Trans. UFFC, **55**(12) (2008).
4. I. V. Ostrovskii, A. B. Nadtochiy, **V. A. Klymko**, "**Plate Acoustic Waves in ZX-cut Lithium Niobate**," Cond. Mat. El. Arch., http://arxiv.org/abs/0712.1566v1 (2007).
5. **V. A. Klymko**, A. B. Yakovlev, I. A. Eshrah, A. A. Kishk and A. W. Glisson, "**Dyadic Green's function of an ideal hard surface circular waveguide with application to excitation and scattering problems**," Radio Science, **40** (2004).
6. V. K. Kiseliov, A. V. Kiseliov, **V. A. Klymko**, T. M. Kushta and P. K. Nesterov, "**A study for quasi-optical waveguide modeling method for measurements of the scattering matrix elements in sub-mm and mm wavelength range**," Proc. IRE NASU, Ukraine, **6**(1) (2001).

INVITED TALK

"Plate acoustic waves in ferroelectric wafers,"
Materials Science and Engineering Dept., University of Tennessee at Knoxville (2009).

SELECTED PRESENTATIONS

1. **V. A. Klymko**, I. V. Ostrovskii, D. Sedorook, "**Aperiodic multidomain ferroelectric transducers**," Fundamental Physics of Ferroelectrics symp. (2010).
2. **V. A. Klymko**, I. V. Ostrovskii, "**Electromechanical response of a multidomain piezoelectric actuator**," Fundamental Physics of Ferroelectrics symp. (2009).
3. **V. A. Klymko**, I. V. Ostrovskii, "**Phononic band gaps in periodically corrugated lithium niobate plate**," 156-th meeting Acoust. Soc. Am. (2008).
4. **V. A. Klymko**, A. B. Nadtochiy, I. V. Ostrovskii, "**Dispersion of plate acoustic waves in periodically poled lithium niobate**," 156-th meeting Acoust. Soc. Am. (2008).
5. **V. A. Klymko**, A. B. Yakovlev, A. A. Kishk, A. W. Glisson, "**Scattering by closed and unclosed metallic rings in a circular waveguide**," ACES, 94-101 (2006).
6. **V. A. Klymko**, A. B. Yakovlev, I. A. Eshrah, A. A. Kishk, A. W. Glisson, "**Scattering by open metal obstacles in a circular waveguide: dyadic Green's function approach**," IEEE-AP Int. symp., **2**, 2127 (2004).
7. **V. A. Klymko**, A. B. Yakovlev, A. A. Kishk, A. W. Glisson, "**Excitation of circular waveguides with radial coaxial probe feeds**," Progress in electromagnetics symp. (2003).
8. **V. A. Klymko**, A. B. Yakovlev, A. A. Kishk, A. W. Glisson, "**Dyadic Green's Functions for circular waveguide-based spatial power combining applications**," URSI Radio Science Meeting (2003).