Alexander W. Sell — Curriculum vitae

Contact Information

Applied Research Lab
The Pennsylvania State University
P.O. Box 30, Mailstop 2110A
State College, PA 16804

Mobile: 919-906-6821
Fax: 814-865-7097
E-mail: aws164@psu.edu

Qualifications and Interests

Shallow water acoustics, acoustic propagation modeling, array signal processing, acoustical source localization, acoustics of bubbly media.

Availability

- Start time is negotiable; may be possible to start immediately
- Geographic location is flexible, but there is preference for the Washington, DC area.

Security Clearance

Department of Defense Secret (Active)

Education

The Pennsylvania State University, University Park, PA

Ph.D. candidate, Acoustics, Expected Graduation, August 2014

- Thesis Topic: Physics-based localization using broadband ship-radiated noise in shallow water environments
- Advisor: R. Lee Culver

University of North Carolina at Asheville, Asheville, NC

B.S., Physics, May, 2008

- Second major in Music and minor in Mathematics

Experience

The Pennsylvania State University, University Park, PA

Graduate Research Assistant — **August 2008 to present**

- Development of a physics-based processor for passive localization of surface ships using horizontal line arrays.
- Characterization of interference phenomena in range-dependent, shallow water environments.
- REVEAL: Receiver Exploiting Variability in Estimated Acoustic Levels, an ONR project investigating improvements to passive sonar signal processing using information about the ocean environment.

Grader — **January 2012 to May 2012**

- Grader for ACS 514 Transducers class with approximately 40 students.
- Assisted residence and distance education students with homework questions and provided guidance in using MATLAB and SPICE software.

Student Council Representative — **April 2010 to November 2011**

- Underwater Acoustics Technical Committee representative for the Acoustical Society of America Student Council.
- Coordination of outreach efforts for student members of the society.

Philippine Sea Pilot Study/Engineering Test — **April 2009 to May 2009**

- Collaboration with scientists from the University of Washington's Applied Physics Lab and Scripps Institution of Oceanography in preparation for a 2010 experiment examining low frequency sound propagation.
- Data collection using an 800 meter, 80 element towed-CTD array in the Philippine Sea.

Refereed Journal Publications

Alexander W. Sell and R. L. Culver, The effects of bathymetry on waveguide invariant-based passive ranging., The Journal of the Acoustical Society of America, (In Preparation)

Alexander W. Sell and R. L. Culver, Signal to noise ratio limitations for invariant-based passive ranging of broadband sources in shallow water environments., The Journal of the Acoustical Society of America, (In Preparation)

Alexander W. Sell and R. L. Culver. Waveguide invariant analysis for modeling time-frequency striations in a range-dependent environment., The Journal of the Acoustical Society of America **130** (2011), no. 5, EL316-EL322.

Scott P. Porter, Daniel J. Domme, Alexander W. Sell and Jeffrey S. Whalen. A craft-project loudspeaker to serve as an educational demonstration., The Journal of the Acoustical Society of America **131** (2012), no. 3, 2431-2434.

Conference Publications

Alexander W. Sell. Using broadband, ship-radiated noise in shallow water environments to perform physics-based localization. In: INTER-NOISE 2012 Proceedings, (2012).

Conference Talks

Alexander W. Sell and R. Lee Culver. Predicting range-frequency interference patterns from broadband sources in a range-dependent, continental shelf environment., The Journal of the Acoustical Society of America **135** (2014), no. 4, 2305.

Alexander W. Sell and R. Lee Culver. Passive ranging in strongly range-dependent environments: Effects of mode coupling on the waveguide invariant., The Journal of the Acoustical Society of America **134** (2013), 4115.

Alexander W. Sell and R. Lee Culver. Passive localization of surface vessels in shallow water using broadband, unintentionally radiated noise., The Journal of the Acoustical Society of America **131** (2012), no. 3, 2054.

Alexander W. Sell and R. Lee Culver. Bayesian histogram filter localizer performance in a multiple contact, continental shelf environment., The Journal of the Acoustical Society of America **129** (2011), no. 4, 2627.

Alexander W. Sell and R. Lee Culver. Waveguide invariant analysis for modeling time-frequency striations in a range-dependent environment., The Journal of the Acoustical Society of America **129** (2011), no. 4, 2509.

Alexander W. Sell and R. Lee Culver. Application of the range dependent waveguide invariant distribution processor to unintentionally radiated broadband noise from surface ships in a range- and azimuthally dependent environment., The Journal of the Acoustical Society of America **130** (2011), no. 4, 2383.

Alexander W. Sell and R. Lee Culver. Passive sonar classification using time-frequency domain "features". The Journal of the Acoustical Society of America **128** (2010), no. 4, 2432.

Alexander W. Sell, R. Lee Culver, Colin W. Jemmott and Brett E. Bissinger. Comparison of fading statistics for shallow and deep acoustic sources in a continental shelf environment. The Journal of the Acoustical Society of America **128** (2010), no. 3, 1998.

Invited Talks

Alexander W. Sell. Waveguide invariant based passive ranging of near-endfire, broadband sources using horizontal line arrays in shallow water environments. NDIA Joint Undersea Warfare Technology Fall Conference. (2013).

Alexander W. Sell. Using broadband, ship-radiated noise in shallow water environments to perform physics-based localization. INTER-NOISE 2012, (2012).

PROFESSIONAL MEMBERSHIPS	Acoustical Society of America, Student Member, 2008–present
SERVICE	Instructor at Penn State Graduate Program in Acoustics MATLAB Bootcamp for incoming graduate students, 2012-2013.
AWARDS/HONORS	National Defense Industrial Association Undersea Warfare Division Fellowship, 2013. Institute of Noise Control Engineering Student Paper Award, 2012. University of North Carolina at Asheville Laurels Scholarship, 2004–2008. Sigma Pi Sigma, National Physics Honor Society, 2008 Eagle Scout, 2001
MORE INFORMATION	More information and auxiliary documents can be found at http://www.personal.psu.edu/aws164.