

# James Campbell Kinsey

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## Education

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- Ph.D. Mechanical Engineering, The Johns Hopkins University**, Baltimore, MD USA, 2006  
Dissertation Title: *Advances in Precision Navigation of Oceanographic Submersibles*  
Adviser: Professor Louis L. Whitcomb
- M.S. Mechanical Engineering, The Johns Hopkins University**, Baltimore, MD USA, 2002
- B.E. Mechanical Engineering, State University of New York at Stony Brook**  
Stony Brook, NY USA, 1998

## Employment

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### Woods Hole Oceanographic Institution, Woods Hole, MA USA

- Deep Ocean Exploration Institute Postdoctoral Scholar* August 2007 - present  
Advisers: Dr. Dana Yoerger (AOP&E) and Dr. Maurice Tivey (G&G)
- Engineer I, Applied Ocean Physics and Engineering* June 1999 - September 1999
- Engineering Assistant I, Applied Ocean Physics and Engineering* May 1998 - September 1998
- Summer Student Fellow, Applied Ocean Physics and Engineering* June 1997 - September 1997

### The Johns Hopkins University, Baltimore, MD USA

- Visiting Research Scientist, Department of Mechanical Engineering* July 2007 - present
- Postdoctoral Fellow, Department of Mechanical Engineering* July 2006 - July 2007
- Graduate Student, Department of Mechanical Engineering* June 1999 - June 2006
- On family leave of absence: January 2000 - January 2001

### Integrated Coating Solutions, Huntington Beach, CA USA

- Automation Consultant* January 2001 - August 2001

### Center for Thermal Spray Research, Stony Brook, NY USA

- Automation Engineer* June 2000 - January 2001

### HD Systems, Inc., Hauppauge, NY USA

- Design Engineer* January 1999 - June 1999

## Peer Reviewed Journal Publications (In electronic versions of this document, click on the blue text to access the cited reference.)

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- [J5] S.A. Soule, V.L. Ferrini, J.C. Kinsey, D.J. Fornari, C. Sellers, S.M. White, K. Von Damm, S.M. Carbotte. Navigational infrastructure at the East Pacific Rise 9° 50'N area following the 2005-06 eruption: seafloor benchmarks and high-resolution multibeam surveys. *Geochemistry, Geophysics, Geosystems*. Submitted, under review.
- [J4] J.C. Kinsey and L.L. Whitcomb. [In-situ alignment calibration of attitude and Doppler sensors for precision underwater vehicle navigation: Theory and experiment](#). *IEEE Journal of Oceanic Engineering*. 32(2):286-299, April 2007.
- [J3] J.C. Kinsey and L.L. Whitcomb. [Adaptive identification on the group of rigid body rotations and its application to precision underwater vehicle navigation](#). *IEEE Transactions on Robotics*, 23(1):124-136, February 2007.
- [J2] V.L. Ferrini, D.J. Fornari, T.M. Shank, J.C. Kinsey, S.A. Soule, S.M. Carbotte, M.A. Tivey, L.L. Whitcomb, D.R. Yoerger, and J. Howland. [Sub-meter bathymetric mapping of the East Pacific Rise crest at 9°50'N linking volcanic and hydrothermal processes](#). *Geochemistry, Geophysics, Geosystems*. 8, Q01006, doi:10.1029/2006GC001333.

- [J1] J. C. Kinsey and L. L. Whitcomb. [Preliminary field experience with the DVLNAV integrated navigation system for oceanographic submersibles](#). *Control Engineering Practice*, 12(12):1541-1548, December 2004. Invited Paper.

### Peer Reviewed Conference Publications (In electronic versions of this document, click on the blue text to access the cited reference.)

- [CR9] J.C. Kinsey, M.A. Tivey and D.R. Yoerger. [Toward High-Spatial Resolution Surveying of the Mid-Ocean Ridges with Autonomous Underwater Vehicles](#). *Proceedings of IEEE Oceans 2008*, September 2008, Quebec City, Canada. Accepted, to appear.
- [CR8] J.C. Kinsey and L.L. Whitcomb. [Model-Based Nonlinear Observers for Underwater Vehicle Navigation: Theory and Preliminary Experiments](#). *Proceedings of the 2007 IEEE International Conference on Robotics and Automation*, pages 4251-4256, April 2007, Rome, Italy.
- [CR7] J.C. Kinsey, R.M. Eustice, and L.L. Whitcomb. [A survey of underwater vehicle navigation: Recent advances and new challenges](#). In *Proceedings of the IFAC Conference of Manoeuvring and Control of Marine Craft*, September 2006, Lisbon, Portugal. Invited paper.
- [CR6] J.C. Kinsey and L.L. Whitcomb. [Adaptive Identification on the Group of Rigid Body Rotations](#). *Proceedings of the 2005 IEEE International Conference on Robotics and Automation*, pages 3256-3261, April 2005, Barcelona, Spain.
- [CR5] J.C. Kinsey, D.A. Smallwood and L.L. Whitcomb. [A New Hydrodynamics Test Facility for UUV Dynamics and Control Research](#). *Proceedings of IEEE Oceans 2003*, pages 1696-1700, September 2003, San Diego, CA.
- [CR4] J.C. Kinsey and L.L. Whitcomb. [Preliminary Experiments with a Calibration Technique for Gyro and Doppler Navigation Sensors for Precision Underwater Navigation](#). *Proceedings of the 13th International Symposium on Unmanned Untethered Submersible Technology*, August 2003.
- [CR3] J.C. Kinsey and L.L. Whitcomb. [Preliminary Field Experience with the DVLNAV Integrated Navigation System for Manned and Unmanned Submersibles](#). *Proceedings of the 1st IFAC Workshop on Guidance and Control of Underwater Vehicles*, April 2003. Paper received the IMarEST prize for Best Paper by a Young Author.
- [CR2] J.C. Kinsey and L.L. Whitcomb. [Towards In-Situ Calibration of Gyro and Doppler Navigation Sensors for Precision Underwater Vehicle Navigation](#). *Proceedings of the 2002 IEEE International Conference on Robotics and Automation*, pages 4016-4023, May 2002, Washington DC.
- [CR1] J.C. Kinsey. [Drag Characterization in the Autonomous Benthic Explorer](#). *Proceedings of IEEE Oceans '98*, pages 1696-1700, September 1998, Nice, France.

### Additional Conference Publications (In electronic versions of this document, click on the blue text to access the cited reference.)

- [CA4] L.L. Whitcomb, M.V. Jakuba, J.C. Kinsey, S.C. Martin, S.E. Webster, J.C. Howland, C. Taylor, D. Gomez-Ibanez, D.R. Yoerger. [Navigation and Control of the Nereus Hybrid Underwater Vehicle for Global Ocean Science to 11,000m Depth: Preliminary Results](#). *The Fourteenth Yale Workshop on Adaptive and Learning Systems*. June 2008, New Haven, CT.
- [CA3] J.C. Kinsey, L.L. Whitcomb, D.R. Yoerger, J.C. Howland, V.L. Ferrini, and Ø. Hegrenæs. [New navigation post-processing tools for oceanographic submersibles](#). In *Eos Trans. AGU, 87(52), Fall Meet. Suppl.*, 2006. Abstract OS33A-1678.
- [CA2] L. Whitcomb, J. Kinsey, D. Yoerger, C. Taylor, A. Bowen, B. Walden, and D. Fornari. [Navigation upgrades to the National Deep Submergence Facility vehicles D.S.V. Alvin, Jason 2, and the DSL-120A](#). In *Eos Trans. AGU 84(46), Fall Meet. Suppl.*, 2003. Abstract OS32A-0225.
- [CA1] Y. Rzhannov, L. Mayer, D. Fornari, T. Shank, S. Humphris, D. Scheirer, J. Kinsey, and L. Whitcomb. [High-resolution photo-mosaicing of the Rosebud hydrothermal vent site and surrounding lava flows, Galapagos Rift 86°W — Techniques and interpretations](#). In *Eos Trans. AGU 84(46), Fall Meet. Suppl.*, 2003. Abstract OS32A-0231.

## Additional Publications

(In electronic versions of this document, click on the blue text to access the cited reference.)

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- [T3] J.C. Kinsey. [Advances in Precision Navigation of Oceanographic Submersibles](#). Ph.D. thesis, Johns Hopkins University, Baltimore, MD USA, June 2006.
- [T2] J.C. Kinsey and L.L. Whitcomb. [Adaptive Identification on the Group of Special Orthogonal Matrices](#). Technical Report, Johns Hopkins University, October 2004.
- [T1] L.L. Whitcomb and J.C. Kinsey. [DVLNAV Installation and Configuration Manual](#). Technical Report, Johns Hopkins University. April 2003.

## Grants

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- [G2] Title: Development of Precision AUV Gravimeter to Enable Near-Bottom Gravity Surveys of Mid-Ocean Ridges  
PI: D.R. Yoerger (PI), J.C. Kinsey, and M.A. Tivey  
Agency: Woods Hole Oceanographic Institution  
Dates: December 1, 2007 to November 30, 2009  
Amount: \$50,000
- [G1] Title: Improved Navigation Techniques for Deep Oceanographic Submersibles  
PI: J.C. Kinsey  
Agency: Edwin Link Foundation  
Dates: September 1, 2004 to September 1, 2005  
Amount: \$25,000

## Field Deployments

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- [D7] **North Atlantic Ocean**, *R/V Oceanus*, April 2008 — *Sentry* AUV engineering cruise.
- [D6] **South Atlantic Ocean**, *R/V Knorr*, January 2008 — Engineering cruise investigating the use of multiple AUVs, employing acoustic modems for communication and navigation, to discover hydrothermal vents.
- [D5] **Pacific Ocean**, *R/V Kilo Moana*, November 2007 — Participated in the engineering trials of *Nereus*, a hybrid ROV/AUV. Developed the navigation system used by *Nereus*.
- [D4] **Sea of Crete and Black Sea**, *NRV Alliance*, August 2007 — Served as watch navigator for the *Hercules* ROV during science operations in the Sea of Crete and archaeological excavations in the Black Sea.
- [D3] **Juan de Fuca Ridge, Pacific Ocean**, *R/V Atlantis*, July 2002 — Installation and testing of navigation upgrades to the DVLNAV underwater vehicle navigation system developed in collaboration with Louis Whitcomb on *DSV Alvin*.
- [D2] **Juan de Fuca Ridge, Pacific Ocean**, *R/V Atlantis*, July 2002 — Deployed DVLNAV, a new underwater vehicle navigation system developed in collaboration with Louis Whitcomb, on the *Jason II* ROV.
- [D1] **Bermuda Rise, Atlantic Ocean**, *R/V Atlantis*, June 2001 — Deployed DVLNAV, a new underwater vehicle navigation system developed in collaboration with Louis Whitcomb, on the *DSL120A* robot vehicle and on the *DSV Alvin* inhabited submersible.

## Teaching Experience

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### The Johns Hopkins University, Baltimore, MD

- Teaching Assistant — [Design and Analysis of Dynamical Systems](#) Spring 2002  
Awarded the 2003 Mechanical Engineering Department Teaching Assistant Award for my work in this class.
- Teaching Assistant — [Sensors and Actuators](#) Spring 2001

## Awards

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- [Postdoctoral Scholar](#), Woods Hole Oceanographic Institution, 2007.
- [Link Foundation Oceanographic Engineering Graduate Research Fellowship](#), 2004-2005.

- [IMarEST Prize for Best Paper by Young Author](#), 1st IFAC Workshop on Guidance and Control of Underwater Vehicles, April 2003.
- 2003 Department of Mechanical Engineering Teaching Assistant Award, The Johns Hopkins University.
- Department Fellow, Department of Mechanical Engineering, Johns Hopkins University, 1999-2000.
- [Summer Student Fellow](#), Woods Hole Oceanographic Institution, Summer 1997.
- Member, Tau Beta Pi and Pi Tau Sigma Honor Societies, inducted 1996.

### **Additional Information**

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- **Recent Invited Talks** — European Network on Marine Robotics Navigation Workshop, Killaloe, Ireland; Center of Excellence Institute for Archeological Oceanography, University of Rhode Island; Interdisciplinary Science Seminar Series, Loyola College of Maryland; AOP&E Department Seminar, Woods Hole Oceanographic Institution; 2006 New Horizons in Science Briefing;
- **Society Memberships** — American Geophysical Union, Institute of Electrical and Electronics Engineers.
- **Recent Reviews** — *IEEE Transactions on Control Systems Technology*, *IEEE Transactions on Robotics*, IEEE Conference on Robotics and Automation, *Oceanography Magazine*, *IEEE Journal of Oceanic Engineering*.