

**ROBERT J. ADAMS**  
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Electrical & Computer Engineering  
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### Preparation

Electrical and Computer Engineering, Virginia Tech, Ph.D., 1998  
Electrical Engineering, Virginia Tech, M.S., 1995  
Electrical Engineering, Michigan Technological University, B.S., 1993,

### Appointments

7/07 – present	Associate Professor, Electrical & Computer Engineering, Univ. Kentucky
8/01 – 7/07	Assistant Professor, Electrical & Computer Engineering, Univ. Kentucky
9/99 – 8/01	Research Assistant Professor, Bradley Department of Electrical and Computer Engineering, Virginia Polytechnic Institute and State University
5/99 – 9/99	EM Research Scientist, Science Applications International Corp., Champaign, IL

### Selected Publications

1. J.C. Young, S.D. Gedney, R.J. Adams, "A Stepped Non-Linear Solver for Non-Linear Magnetic Materials with Hysteresis," *IEEE Transactions on Magnetics*, accepted.
2. J.C. Young, R.J. Adams, S.D. Gedney, "Well-Conditioned Nyström-discretization of the volume integral equation for eddy current analysis," *IEEE Transactions on Magnetics*, accepted.
3. N. Hendijani, J. Cheng, R.J. Adams, "Combined field integral equation using a constraint-based Helmholtz decomposition," *IEEE Transactions on Antennas and Propagation*, 62(3):1500-1503, 2013.
4. J. C. Young, S. D. Gedney, R. J. Adams, "Eddy current analysis using a Nyström discretization of the volume integral equation," *IEEE Transactions on Magnetics*, 99(1):1-7, 2013.
5. J. Cheng, R. J. Adams, "Electric field-based surface integral constraints for Helmholtz decompositions of the current on a conductor," *IEEE Transactions on Antennas and Propagation*, 61(9):4632-4640, 2013.
6. J. C. Young, Y. Xu, R. J. Adams, S.D. Gedney, "High-order Nyström discretization of an augmented electric field integral equation," *IEEE Antenna and Wireless Propagation Letters*, vol. 11, pp. 846-849, 2012.
7. X. Xu, R. J. Adams, "Sparse matrix factorization using overlapped localizing LOGOS modes on a shifted grid," *IEEE Transactions on Antennas and Propagation*, 60(3):1414-1424, 2012.
8. X. Xu, Y. Xu, R.J. Adams, "Error analysis for matrix factorizations using non-overlapped localizing basis functions," *IEEE Transactions on Antennas and Propagation*, 58(9):3081-3086, 2010.
9. R. J. Adams, Y. Xu, X. Xu, J. Choi, S. D. Gedney, F. X. Canning, "Modular fast direct electromagnetic analysis using local-global solutions modes," *IEEE Transactions on Antennas and Propagation*, 56(8):2427-2441, 2008.
10. R. J. Adams, A. Zhu and F. X. Canning, "Efficient solution of integral equations in a localizing

basis,” *Journal of Electromagnetic Waves and Applications*, 19(12):1583-1594, 2005.

11. R. J. Adams and N. J. Champagne, “A numerical implementation of a modified electric field integral equation,” *IEEE Transactions on Antennas and Propagation*, 52(9):2262-2266, 2004.
12. R. J. Adams, “Physical and analytical properties of a stabilized electric field integral equation,” *IEEE Transactions on Antennas and Propagation*, 52(2):362-372, 2004.

### **Synergistic Activities**

- *Magström*, Co-initiator and contributor to the development and validation of the underwater electromagnetic simulation tool, *Magström*, for the US Navy. The tool is used to predict electromagnetic field behaviors near and inside large, complex vessels. The tool incorporates significant formulation and solver work discussed in the foregoing publications.
- *Teachers Who Made a Difference*, 2007 & 2013, <http://www.uky.edu/Education/TWMAD/>
- *NSF CAREER Award*, 2006-2011, <http://www.nsf.gov/career>.
- *ECE Department Outstanding Teaching Award*, 2006, ECE Department, University of Kentucky.
- *R.W.P. King Paper Award*, 2005, IEEE Antennas and Propagation Society.
- *Bradley Postdoctoral Fellowship*, 1999 –2001, Electrical and Computer Engineering, Virginia Tech
- *Bradley Fellowship*, 1995–1998, Electrical and Computer Engineering, Virginia Tech

### **Collaborators**

Lawrence Carin (Duke University), Nathan Champagne (NASA-JSC), Bradley Davis (Northrup Grumman), Stephen Gedney (University of Colorado at Denver), Chong Luo (Cadence Corporation), Michael Khayat (NASA-JSC), Yuan Xu (Nanjing University), Liang Xuan (GE Medical), Don Wilton (University of Houston), John Young (University of Kentucky), Zhiyong Zeng (ANSYS)

### **Former students and postdocs**

Faisal Mev (Microsoft), Srinivasa Patri (Xilinx), Steve Ganapragasam (ADS Engineers), Gokulnaraiyn Ramaswami (Intuitive Surgical), Bryan Guernsey (Sandia National Laboratories), Xin Xu (ANSYS), Kiran Arcat (Lexmark), Jin Cheng (University of Kentucky), Junshik Choi (University of Kentucky), Buxton Johnson (Intertek), Zhiyong Zeng (ANSYS), Yuan Xu (Nanjing University), Aiming Zhu (Alphaomega Electromagnetics), Liang Xuan (GE Medical)