EDIT VARGA

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WORK EXPERIENCE

Postdoctoral Research Associate, University of Notre Dame Department of Electrical Engineering, Notre Dame, IN *May 2013 – pres.*

Ph.D., University of Notre Dame Department of Electrical Engineering
Notre Dame, IN *May 2013*
Thesis title: Experimental Study of Novel Nanomagnet Logic Devices
Advisor: Dr. Wolfgang Porod

Intern, IBM Zurich *2011 Summer*
Spin-SEM studies of nanomagnets
Supervisor: Rolf Allenspach

EDUCATION

M.S.E.E., University of Notre Dame Department of Electrical Engineering
Notre Dame, IN *January 2010*
Thesis title: Experimental Study of new Magnetic Circuit Elements Built from Nanomagnets for Magnetic Quantum-Dot Cellular Automata Logic Applications
Advisor: Dr. Wolfgang Porod

Diploma, Pázmány Péter Catholic University Faculty of Information Technology
Budapest, Hungary *July 2007*
Diploma title: MRI measurement studies and simulation verification
Advisor: Dr. Árpád I. Csurgay

PATENT

- M. T. Niemier, M. T. Alam, G. H. Bernstein, X. S. Hu, W. Porod, and **E. Varga**, „Non-Majority MQCA Magnetic Logic Gates and Arrays Based on Misaligned Magnetic Islands," *US Patent* No: 8058906, 2011.

RESEARCH EXPERIENCE

Cleanroom Experience *2007 – pres.*

- Electron beam lithography (Elionix ELS-7700, Vistec PG5200)
- Electron beam deposition
- Plasma etching
- Scanning electron microscopy (Hitachi S-4500, FEI Magellan 400)
- Focused ion beam (FEI Helios 600)
- Magnetic force microscopy (Veeco MultiMode V, Attocube attoAFM/MFM)
- Atomic force microscopy (Veeco MultiMode V, Attocube attoAFM/MFM)

MRI Experience *2006 – 2007*

- Experiment on Siemens MRI 3 Tesla

Machine Shop training *2009*

TEACHING EXPERIENCE

University of Notre Dame

- **Imaging Technologies for Micro and Nano Technologies** *2011 Spring*
  - Gave 6 lectures on Scanning Probe Microscopy
- **Microwave Circuit Design** *2007 Fall*
  - Teaching assistant – oversaw lab

Pázmány Péter Catholic University

- **Physics of Information Technology I and II.** *2006 – 2007*
  - Graded final exams
  - Reviewed homework problems with students
  - Met with students, went through problem-solving examples

SERVICE AND LEADERSHIP

Reviewer

- International Journal of Circuit Theory and Applications *2011 – pres.*
- IEEE Transactions on Magnetics (Soft Magnetic Materials conference) *2011*

Trainer – Veeco MultiMode V SPM *2007 – pres.*

Webmaster – Handbell Choir of the University of Notre Dame *2009 – pres.*

Member

- ✓ University of Notre Dame Handbell Choir *2008 – present*
- ✓ University of Notre Dame Liturgical Choir *2010, 2008, 2006, 2005 Summer*
- ✓ Don Bosco Juvenile Choir and Orchestra, Budapest *2003 – 2007*

LANGUAGE AND COMPUTER SKILLS

- Fluent in *English*
- Proficient in *German*
- Reading and writing in *Latin*
- *Hungarian* native
- L-Edit, Layout Beamer
- Matlab, Mathematica
- HTML, Excel, Word

PUBLICATIONS

- **E. Varga**, G. Csaba, G. H. Bernstein, and W. Porod, „Experimental Realization of a Nanomagnet Full Adder Using Slanted-Edge Magnets," *IEEE Transactions on Magnetics*, **49**(7), pp. 4452 - 4455, 2013.
- **E. Varga**, G. Csaba, G. H. Bernstein, and W. Porod, „Implementation of a Nanomagnet Full Adder Circuit," *Nanoelectronic Device Applications Handbook* chapter, CRC Press, 2012.
- **E. Varga**, G. Csaba, G. H. Bernstein, and W. Porod, „Domain-Wall Assisted Switching of Single-Domain Nanomagnet," *IEEE Transactions on Magnetics*, **48**(11), pp. 3563-3566, 2012.
- M. Niemier, **E. Varga**, G. H. Bernstein, W. Porod, M. T. Alam, A. Dingler, A. Orlov, and X. S. Hu, „Shape Engineering for Controlled Switching With Nanomagnet Logic," *IEEE Transactions on Nanotechnology*, **11**(2), pp. 220-230, 2012. (#3 most downloaded paper in March, 2012).
- P. Li, G. Csaba, V. K. Sankar, X. Ju, **E. Varga**, P. Lugli, X. S. Hu, M. Niemier, W. Porod, and G. H. Bernstein, „Direct Measurement of Magnetic Coupling between

Nanomagnets for NML Applications," *IEEE Transactions on Magnetics*, **48**(11), pp. 4402-4405, 2012.

- **E. Varga**, A. Imre, L. Ji, and W. Porod, „Simulation of Magnetization Reversal and Domain-Wall Trapping in Submicron Permalloy Wires with Different Wire Geometries," *IEEE Transactions on Nanotechnology*, **11**(4), pp. 682 - 686, 2012.
- M. T. Niemier, G. H. Bernstein, G. Csaba, A. Dingler, X. S. Hu, S. Kurtz, S. Liu, J. Nahas, W. Porod, M. Siddiq, and **E. Varga**, „Nanomagnet Logic: Progress Toward System-Level Integration," *J. of Physics-Condensed Matter*, **23**(49), 2011.
- **E. Varga***, S. Kurtz*, M. Niemier, W. Porod, G. H. Bernstein, and X. S. Hu, „Two Input, Non-Majority Magnetic Logic Gates: Experimental Demonstration and Future Prospects," *Journal of Physics: Condensed Matter*, **23**(5), pp. 053202, 2011. (* authors contributed equally to this work)
- **E. Varga**, A. Orlov, M. T. Niemier, X. S. Hu, G. H. Bernstein, and W. Porod, „Experimental Demonstration of Fanout for Nanomagnet Logic," *IEEE Transactions on Nanotechnology*, **9**(6), pp. 668-670, 2010.
- A. Imre, **E. Varga**, L. Ji, B. Ilic, V. Metlushko, G. Csaba, A. Orlov, G. H. Bernstein, and W. Porod, „Flux-Closure Magnetic States in Triangular Cobalt Ring Elements," *IEEE Transactions on Magnetics*, **42(**11), pp. 3641-3644, 2006.

SELECTED CONFERENCE PRESENTATIONS

- **E. Varga**, M. T. Niemier, G. Csaba, G. H. Bernstein, and W. Porod, „Experimental Realization of a Nanomagnet Full Adder Using Slanted-Edge Magnets," *12th Joint MMM/Intermag Conference*, Chicago, IL, 2013.
- **E. Varga**, G. Csaba, G. H. Bernstein, and W. Porod, „Domain-Wall Assisted Switching of Single-Domain Nanomagnet," *International Magnetics Conference (INTERMAG)*, Vancouver, Canada, 2012.
- **E. Varga**, G. Csaba, G. H. Bernstein, and W. Porod, „Implementation of a Nanomagnetic Full Adder Circuit," *11th International Conference on Nanotechnology (IEEE Nano)*, Portland, OR, pp. 1244 -1247, 2011.
- **E. Varga**, A. Imre, L. Ji, and W. Porod, „Simulation of Magnetization Reversal and Domain Wall Trapping in Submicron NiFe Wires with Different Wire Geometries," *11th International Workshop on Computational Electronics (IWCE-11)*, Vienna, Austria, 2006.