

Curriculum Vitae

Name and Surname: Ezio Iacocca
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PROFILE

I am a challenge-driven and well organized person. I have education and research experience in physics, nanotechnology, and electronic engineering, with strong emphasis in programming and theory. During my doctoral studies, I have been responsible for the development, tutoring, and completion of many research projects involving GPU-based micromagnetic and macrospin simulations, electrical characterization, numerical methods, and theoretical investigation of spin transfer driven devices. My research work has been published in high-impact peer-reviewed journals and I have excellent communication skills and experience presenting my work in conferences both in Europe and North America.

POSITIONS

- June 2015 – Present. Visiting Scholar, University of Colorado at Boulder, CO, USA.
- January 2015 – Present. Postdoctoral fellow. Chalmers University of Technology, Gothenburg, Sweden.
- September 2014 – December 2014. Assistant researcher. University of Gothenburg, Gothenburg, Sweden.
- August 2010 – December 2014. Researcher at NanOsc AB, Sweden.

EDUCATION

- August 2010 – September 2014. PhD in Physics. University of Gothenburg, Gothenburg, Sweden.
- August 2009 – June 2010. Master of Science in Nanotechnology. Royal Institute of Technology (KTH), Stockholm, Sweden.
- September 2003 – February 2009. Electronic Engineer, Cum-Laude. “Universidad Simón Bolívar”, Caracas, Venezuela.

LANGUAGES

- Italian: native speaker.
- Spanish: native speaker.
- English: fluent.
- Swedish: basic.

HONORS, AWARDS, AND GRANTS

- 2015. Faculty of Science prize for best thesis in 2015. University of Gothenburg, Gothenburg, Sweden.
http://science.gu.se/english/News/News_detail//thesis-prize-2015-to-ezio-iacocca.cid1324118
- 2015 – 2017. International Postdoc Grant (\$400,000 for 3 years) – Swedish Research Council.
- 2014. Selected as one of five finalists for Best Student Presentation Award and recipient of US\$250 at INTERMAG 2014, Dresden, Germany.
- 2011. Recipient of US\$1200 to attend the IEEE Magnetic School in New Orleans, USA.
- 2008. Cum-Laude Electronic Engineer, “Universidad Simón Bolívar”, Caracas, Venezuela.

PUBLICATIONS IN PEER REVIEWED JOURNALS.

1. Y. Zhou, **E. Iacocca**, A. Awad, R.K. Dumas, F.C. Zhang, H.B. Braun, and J. Åkerman, *Dynamically stabilized magnetic skyrmions*, Nature Comm. **6**, 8193 (2015)
2. M. Madami, **E. Iacocca**, S.R. Sani, G. Gubbiotti, S. Tacchi, R.K. Dumas, J. Åkerman, and G. Carlotti, *Propagating spin waves excited by spin-transfer-torque: A combined electrical and optical study*, Phys. Rev. B **92**, 024403 (2015)
3. **E. Iacocca**, P. Dürrenfeld, O. Heinonen, J. Åkerman, and R.K. Dumas. *Mode-coupling mechanisms in nanocontact spin-torque oscillators*, Phys. Rev. B **91**, 104405 (2015)
4. T. Chen, A. Eklund, **E. Iacocca**, S. Rodriguez, G. Malm, J. Åkerman, and A. Rusu, *Comprehensive and macrospin-based magnetic tunnel junction spin torque oscillator model – Part I: Analytical model of the MTJ STO*, IEEE T. Electron. Dev. **62**, 1045 (2015)
5. T. Chen, A. Eklund, **E. Iacocca**, S. Rodriguez, G. Malm, J. Åkerman, and A. Rusu, *Comprehensive and macrospin-based magnetic tunnel junction spin torque oscillator model – Part II: Verilog-A model implementation*, IEEE T. Electron. Dev. **62**, 1037 (2015)
6. P. Dürrenfeld, **E. Iacocca**, J. Åkerman, and P.K. Muduli, *Modulation-mediated unlocking of a parametrically phase-locked spin torque oscillator*, Appl. Phys. Lett. **105**, 252404 (2014)
7. M. Ranjbar, P. Dürrenfeld, M. Haidar, **E. Iacocca**, M. Balinskiy, T.Q. Le, M. Fazlali, A. Houshang, A.A. Awad, R.K. Dumas, and J. Åkerman, *CoFeB-based spin Hall nano-oscillators*, IEEE Magn. Lett. **5**, 3000504 (2014)
8. A. Houshang, S.R. Sani, P. Dürrenfeld, **E. Iacocca**, J. Åkerman, and R.K. Dumas, *Effect of excitation fatigue on the synchronization of multiple nanocontact spin-torque oscillators*, IEEE Magn. Lett. **5**, 3000404 (2014)

9. R. Sharma, P. Dürrenfeld, **E. Iacocca**, O. Heinonen, J. Åkerman, and P.K. Muduli, *Mode-hopping mechanism generating colored noise in a magnetic tunnel junction based spin torque oscillator*, Appl. Phys. Lett. **105**, 132404 (2014)
10. R.K. Dumas, S.R. Sani, S.M. Mohseni, **E. Iacocca**, Ye. Pogoryelov, P.K. Muduli, S. Chung, P. Dürrenfeld, and J. Åkerman, *Recent advances in nanocontact spin-torque oscillators*, IEEE Trans. Magn. **50**, 1 (2014)
11. **E. Iacocca**, R.K. Dumas, L. Bookman S.M. Mohseni, S. Chung M. Hofer, and J. Åkerman, *Confined dissipative droplet solitons in spin-valve nanowires with perpendicular magnetic anisotropy*, Phys. Rev. Lett. **112**, 047201 (2014)
12. **E. Iacocca**, O. Heinonen, P.K. Muduli, and J. Åkerman, *Generation linewidth of mode-hopping spin torque oscillators*, Phys. Rev. B **89**, 054402 (2014)
13. A. Eklund, S. Bonetti, S. R. Sani, S.M. Mohseni, J. Persson, S. Chung, A. Banuazizi, **E. Iacocca**, M. Östling, J. Åkerman, and G. Malm, *Dependence of the colored frequency noise in spin torque oscillators on current and magnetic field*, Appl. Phys. Lett. **104**, 092495 (2014)
14. P. Dürrenfeld, **E. Iacocca**, J. Åkerman, and P.K. Muduli, *Parametric excitation in a magnetic tunnel junction-based spin torque oscillator*, Appl. Phys. Lett. **104**, 052410 (2014)
15. S. Chung, S.M. Mohseni, S.R. Sani, **E. Iacocca**, R.K. Dumas, T.N. Ahn Nguyen, Ye. Pogoryelov, P.K. Muduli, A. Eklund, M. Hofer, and J. Åkerman, *Spin transfer torque generated magnetic droplet solitons*. J. Appl. Phys. **115**, 172612 (2014)
16. S.M. Mohseni, S.R. Sani, R.K. Dumas, J. Persson, T.N. Anh Nguyen, S. Chung, Ye. Pogoryelov, P.K. Muduli, **E. Iacocca**, A. Eklund, and J. Åkerman, *Magnetic droplet solitons in orthogonal nano-contact spin torque oscillators*, Physica B **435**, 84 (2014)
17. **E. Iacocca** and J. Åkerman, *Resonant excitation of injection-locked spin-torque oscillators*, Phys. Rev. B **87**, 214428 (2013)
18. R.K. Dumas, **E. Iacocca**, S. Bonetti, S.R. Sani, S.M. Mohseni, A.Eklund, J. Persson, O. Heinonen, and Johan Åkerman, *Spin-wave-mode coexistence on the nano-scale: A consequence of the Oersted-field-induced asymmetric energy landscape*, Phys. Rev. Lett. **110**, 257292 (2013)
19. O. Heinonen, P.K. Muduli, **E. Iacocca**, and J. Åkerman. *Decoherence, mode hopping, and mode coupling in spin torque oscillators*, IEEE Trans. Magn. **49**, 4398 (2013)
20. S.M. Mohseni, S.R. Sani, J. Persson, T.N. Ahn Nguyen, S. Chung, Ye. Pogoryelov, P.K. Muduli, **E. Iacocca**, A. Eklund, R.K. Dumas, S. Bonetti, A. Deac, M.A. Hofer, and J. Åkerman, *Spin torque-generated magnetic droplet solitons*, Science **339**, 1295 (2013)

21. **E. Iacocca** and J. Åkerman, *Analytical investigation of modulated spin-torque oscillators in the framework of coupled differential equations with variable coefficients*, Phys. Rev. B **85**, 184420 (2012)
22. **E. Iacocca** and J. Åkerman, *Destabilization of serially connected spin-torque oscillators via non-Adlerian dynamics*, J. Appl. Phys. **110**, 103910, (2011) (Selected for publication in the Virtual Journal of Nanoscale Science & Technology, December 12, 2011)
23. Ye. Pogoryelov, P.K. Muduli, S. Bonetti, **E. Iacocca**, F. Mancoff and J. Åkerman, *Frequency modulation of spin torque oscillator pairs*, Appl. Phys. Lett. **98**, 192501 (2011)
24. Y. Zhou, V. Tiberkevich, G. Consolo, **E. Iacocca**, B. Azzerboni, A. Slavin and J. Åkerman, *Oscillatory transient regime in the forced dynamics of a nonlinear auto oscillator*, Phys. Rev. B **82**, 012408 (2010)

ACADEMIC ACTIVITIES

1. July / August 2015 – Visiting Scientist at Argonne National Laboratory, Lemont, IL, USA.
2. January 2013 – Visiting Scientist at Argonne National Laboratory, Lemont, IL, USA
3. December 2012 – Visiting Scientist at CNRS, Grenoble, France
4. September 2008 – December 2008: Teaching assistant of Electronic Circuits I (Introduction to analog electronics)
5. August 2007 – July 2008. Exchange student at the Royal Institute of Technology (KTH), Stockholm, Sweden
6. January 2007 – July 2007. Teaching assistant of Electronic Circuits II (Microelectronic circuits)

SEMINARS AND PRESENTATIONS

1. **E. Iacocca**, *Current-induced waves in thin film ferromagnets*. University of Colorado at Boulder (<http://amath.colorado.edu/content/nonlinear-waves-seminar-ezio-iacocca>) November 3rd, Boulder, CO, USA.
2. **E. Iacocca**, *An iterative numerical method for localized magnetic textures*. Front Range advanced magnetism symposium, September 23rd, 2015. Colorado State University, Fort Collins, CO, USA.
3. **E. Iacocca**, *From dissipative droplets to skyrmions*. Argonne National Laboratory (<http://www.msdl.gov/seminars/iacocca-080415>), August 4th, 2015. Lemont, IL, USA.
4. **E. Iacocca**, P. Dürrenfeld, J. Åkerman, and R.K. Dumas, *Fine-tuning the energy landscape of localized spin wave modes in elliptical nano-contact spin torque oscillators*. INTERMAG 2014 – CC-05, May 6th, 2014. Dresden, Germany.

5. O. Heinonen, **E. Iacocca**, and J. Åkerman, *Mode-hopping, coexistence, and linewidth broadening in a two-mode spin torque oscillator*. MMM 2013 – EH-11, November 7th, 2013. Denver, USA.
6. **E. Iacocca**, R.K. Dumas, L. Bookman, S.M. Mohseni, S. Chung, M. Hofer, and J. Åkerman, *Confined dissipative droplet solitons in spin-valve nanowires with perpendicular magnetic anisotropy*. MMM 2013 – CB-07, November 6th, 2013. Denver, USA.
7. **E. Iacocca**, R.K. Dumas, L. Bookman, S.M. Mohseni, S. Chung, M. Hofer, and J. Åkerman, *A quasi-one-dimensional dissipative droplet in nanowire spin-valves with perpendicular magnetic anisotropy*. Magnonics 2013, August 7th, 2013. Varberg, Sweden.
8. **E. Iacocca**, S.M. Mohseni, S. Chung, R.K. Dumas, M. Hofer, and J. Åkerman, *Magnetic droplet driven domain-wall injection in spin-valve nanowires with perpendicular magnetic anisotropy*. HMM 2013 – WAO-10, May 15th, 2013. Taormina, Italy.
9. **E. Iacocca**, R.K. Dumas, S. Bonetti, S.R. Sani, S.M. Mohseni, Olle Heinonen, and J. Åkerman, *Micromagnetic simulations of highly non-linear modes in spin torque oscillators: propagating, solitonic and magnetic dissipative droplet modes*. Argonne National Laboratory (<http://www.msd.anl.gov/seminars/iacocca-011013>), January 10th, 2013. Lemont, IL, USA.
10. **E. Iacocca**, R.K. Dumas, S. Bonetti, S.R. Sani, S.M. Mohseni, and J. Åkerman, *Current-induced dynamics in magnetic thin films: GPU accelerated micromagnetic simulations of non-linear spin wave modes*. SPINTEC, December 4th, 2012. Grenoble, France.
11. **E. Iacocca** and J. Åkerman, *Using frequency modulation of an injection-locked spin torque oscillator to resonantly determine its ringing frequency*. INTERMAG 2012 - CD-04, May 9th, 2010. Vancouver, Canada.
12. **E. Iacocca** and J. Åkerman, *Injection and modulation of spin torque oscillators*. MACALO meeting, October 7th, 2011. Arlanda, Sweden.
13. **E. Iacocca** and J. Åkerman, *Mutual locking of spin torque oscillators: towards array synchronization*. Royal Institute of Technology. December 8th, 2010. Kista, Sweden.

**CONTRIBUTED
POSTERS TO
CONFERENCES**

1. P. Wills, **E. Iacocca**, and M. Hofer, *Finite temperature effects on magnetic solitons*. Front Range advanced magnetic symposium, September 23rd, 2015. Colorado State University, Fort Collins, CO, USA.
2. M. Madami, **E. Iacocca**, S.R. Sani, G. Gubbiotti, S. Tacchi, R.K. Dumas, J. Åkerman, and G. Carlotti, *Propagating spin waves excited by spin-transfer-torque in nanocontact oscillators with tilted magnetization: a combined electrical and Brillouin light scattering*

- study*. INTERMAG 2014 – BT-05, May 5th, 2014. Dresden, Germany.
- 3 P. Dürrenfeld, **E. Iacocca**, M. Ranjbar, S. Chung, S.M. Mohseni, and J. Åkerman, *Magnetic droplets in spin-valve nanowires*. INTERMAG 2014 – GR-09, May 8th, 2014. Dresden, Germany.
 - 4 Y. Zhou, **E. Iacocca**, R.K. Dumas, and J. Åkerman. *Magnetic droplet skyrmions*. INTERMAG 2014 – GR-14, May 8th, 2014. Dresden, Germany.
 - 5 R. Sharma, P. Dürrenfeld, **E. Iacocca**, J. Åkerman, and P.K. Muduli, *Frequency noise in magnetic tunnel junction based spin torque oscillators*. MMM 2013, EU-09.
 - 6 S. Chung, S.M. Mohseni, S.R. Sani, A. Eklund, **E. Iacocca**, and J. Åkerman, *Magnetic field annihilation of magnetic droplet solitons in nano-contact spin-torque oscillators*. MMM 2013, CP-02.
 - 7 **E. Iacocca**, R.K. Dumas, L. Bookman, S.M. Mohseni, S. Chung, M. Hofer, and J. Åkerman, *A quasi-one-dimensional dissipative droplet in nanowire spin-valves with perpendicular magnetic anisotropy*. JEMS 2013, TU-24.
 - 8 P. Dürrenfeld, P.K. Muduli, **E. Iacocca**, and J. Åkerman, *Parametric excitation in a magnetic tunnel junction-based spin torque oscillator*. Joint MMM / INTERMAG 2013, BR-11.
 - 9 **E. Iacocca** and J. Åkerman, *Analytical investigation of modulated spin torque oscillators in the framework of coupled differential equations with variable coefficients*. INTERMAG 2012, FR-04.
 - 10 R.K. Dumas, **E. Iacocca**, S. Bonetti, S. Sani, M. Mohseni, A. Eklund, J. Persson, O. Heinonen and J. Åkerman, *Self-modulation in nanocontact spin torque oscillators with in-plane anisotropy*. INTERMAG 2012, HS-07.
 - 11 **E. Iacocca** and J. Åkerman, *Non-Adlerian transient dynamics destabilizes serial spin-torque oscillator synchronization*. Spin Master Voice 2011, Paris, France.
 - 12 **E. Iacocca**, V. Puliafito, G. Consolo and J. Åkerman, *Instability in mutual synchronization of spin torque oscillators*. MMM 2010.
 - 13 **E. Iacocca** and J. Åkerman, *Transient mutual phase locking and instability in spin torque oscillators*. NordicSpin'10.
 - 14 **E. Iacocca**, Y. Zhou, J. Persson and J. Åkerman, *Spin torque oscillator phase locking to a noisy alternating current*. INTERMAG Europe 2008 International Magnetism Conference, DP-14, p. 139.

**ATTENDANCE TO
CONFERENCES AND
WORKSHOPS**

1. 2014. Spin torque and magnetic solitons workshop, Gothenburg, Sweden. June 6th.
2. 2014. INTERMAG, Dresden, Germany. May 4th to May 8th.
3. 2013. MMM, Denver, USA. November 4th to November 8th.
4. 2013. Joint European Magnetic Symposia (JEMS) 2013, Rhodes, Greece. August 25th to August 30th.
5. 2013. Magnonics 2013, Varberg, Sweden. August 4th to August 8th.
6. 2013. 9th International Symposium on hysteresis modelling and micromagnetics (HMM), Taormina, Italy. May 13th to May 15th.
7. 2013. Joint MMM – INTERMAG, Chicago, USA. January 14th to January 18th.
8. 2012. International Workshop on Advanced Micromagnetics (IWAM), San Diego, USA. May 21st to May 22nd.
9. 2012. INTERMAG, Vancouver, Canada. May 7th to May 11th.
10. 2012. NordicSpin'12, Varberg, Sweden. April 22nd to April 25th.
11. 2011. Spin Master Voice workshop: “Challenges and opportunities of Spin-Transfer Nano-Oscillator”, Paris, France. December 13th to December 16th.
12. 2011. MACALO (European project) update meeting. Arlanda, Sweden.
13. 2011. IEEE Magnetic Summer School. New Orleans, USA. May 23th to May 27th.
14. 2010. International Workshop on “Spin dynamics in nanomagnets: Dissipative versus non-dissipative processes”, Duisburg, Germany. October 18th to October 20th.
15. 2010. International Workshop on “Spin-torque related phenomena in magnetic nanostructures”, Duisburg, Germany. October 13th to October 15th.
16. 2010. NordicSpin'10, Gimo, Sweden. May 7th to May 9th.
17. 2009. Multicore Day 2009. Kista, Sweden. September 4th.
18. 2008. INTERMAG, Madrid, Spain. May 4th to May 8th.
19. 2008. NordicSpin '08, Gimo, Sweden. April 22th to April 25th.

REFERENCES

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Dr. Olle Heinonen

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Dr. Randy Dumas

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