

University of Groningen

## High frequency spin dynamics in hybrid metallic devices

Costache, Marius Vasile

**IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.**

*Document Version*

Publisher's PDF, also known as Version of record

*Publication date:*

2007

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

Costache, M. V. (2007). *High frequency spin dynamics in hybrid metallic devices*. s.n.

### Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

### Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

# Acknowledgements

This thesis presents the main experimental results of four years of research on spin transport in metallic systems (with 80% obtained in the last year), work carried out in the Physics of Nanodevices Group.

First, I visited the group at the beginning of 2002 as an exchange student for my MSc project. I was impressed by the excellent scientific environment and after a few months in the group I decided to continue with my PhD there, which turn out to be a very wise decision.

This thesis could not be made possible without the help of many people. First of all, I would like to express my gratitude to my supervisor Bart van Wees for giving me the chance to do a PhD in one of the best groups in the field and for always showing interest in the work I did. I admire your scientific knowledge and I have learned a lot from your critical analysis of everything, from our work to life in general.

I am grateful to Caspar van der Wal for initiating me in high frequency measurement techniques. Your expertise was of great help for the success of my project. I have learned a lot from you, and I admire your capability of planning research.

I also want to thank Michele Zaffalon for the work we did together (even through not published yet/ever). I enjoyed the late hours in the lab, the pizza which you made and I have learned a lot from the numerous discussions we had. I always appreciate your friendly spirit and your advice.

I am very much indebted to Steven Watts for always being very helpful with reading my thesis and the papers. Thank you also for your patience on explaining the many questions I had.

Special thanks to Maksym Sladkov, your vast knowledge of physics and your enthusiasm (specially at the beginning) has been very important for the project. It was a pleasure to work with you, and I wish you good luck with the research.

I also thank Julier Grollier for her essential contribution to this work and I admire your positive attitude, you were certain from the beginning that the spin-pumping experiment would succeed.

Our results would not have been possible without the excellent technical support. Special thank to Siemon Bakker for all the help in the lab and with things related to life in The Netherlands, and to Bernard Wolfs (my

friend) always ready to help me. Many thanks also to Gert ten Brinke and Pim van den Dool for the SEM pictures of my devices.

For the pleasant atmosphere in the office and for being my paranymph I would like to thank to my office colleague Ji Liu. I wish you good luck with your research.

Special thanks must go to Erik Koop for organizing the trip to Germany for the 2006 World Cup Football tournament. Even though the Dutch team lost, I had an unforgettable experience there.

Furthermore, it is a pleasure to thank to all other (former) group members, Alex Lerescu, Mihai Popinciuc, Csaba Jozsa, Nicos Tombros, Marius Trouwborst, Eek Huisman, Bram Slachter, Thorsten Last, Pedro Rizo, Gabriela Visanescu, Irina Craciun, Marc van Veenhuizen, Sense-Jan van der Molen, Andrei Filip and Friso Jedema. For all the paper work I thank our group secretary Sonja Groot.

Among the many friends outside the lab I would especially like to thank: Yu Wu, Mirko Unipan, Nicoleta Voicu, Oana Jurchescu, Ana Arteni, Ciprian Crismaru, Aurora Batinas, Popescu Lacramioara, Mihailesti Valentin, Dan Cosma, Silviu Sirbu and Dan Cringus.

Finally, I thank my family and my brother Gabi for all their understanding and support. And most of all I thank my better half, Madalina, for sustain and love.

Thank you.

Marius V. Costache

Cambridge Massachusetts,  
April 2007.