CV of Szabolcs Csonka (Department of Physics, Budapest University of Technology) (10/01/2015)

Birth: 1978. Budapest, Hungary
married, father of two boys, one girl (1, 3 and 6 years)

Associate Professor
Department of Physics, Solid State Physics Laboratory
Budapest University of Technology and Economics
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Hungary

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Tel.: +36-1-4633056

Qualification

2001	MSc degree in physics ("Magnetic phase diagram of BaVS3") Budapest University of Technology and Economics (BME)
2006	PhD degree in physics ("Electron transport in atomic and molecular junctions"), Department of Physics, BUTE

Employment

2003 - 2005	Hungarian Academy of Sciences, research assistant
2006 - 2009	Department of Physics, BUTE, scientific coworker
2006 - 2008	Marie Curie Fellow, Department of Physics, University Basel, CH, Group of Christian Schonenberger
2009 - 2011	Assistant professor, Department of Physics, BME
2011 -	Associated professor, Department of Physics, BME

Interests Electron transport in nanostructures
Hybrid Nanostructures: Semiconductor nanowires, graphene, spin transport, quantum dots, superconducting correlations
Atomic & molecular junctions: transport through single metal atoms, simple molecules, point contact spectroscopy, Andreev spectroscopy

Important experiences abroad

1999	Erasmus Scholarship, University 'La Sapienza' Rome, Italy (1 semester)
2000 – 2003	Visitor researcher, University of Nijmegen, the Netherlands (4 months)
2004	Visitor researcher, Ecole Polytechnique Fédérale de Lausanne, Switzerland (1 month)
2006 – 2008	Post doc, group of C. Schönenberger, University of Basel, Switzerland
2009 – 2010	Visitor professor program "Quantum Coherence and Computation", Swiss Nanoscience Institute, Switzerland (4 months)

Awards

2000	BME Scholarship
2001	National competition for physics students, 1st prize in Solid state physics section
2005	Award of excellent youth scientist, Hungarian Academy of Sciences
2006 –2008	Marie Curie Intra-European Fellowships
2009 –2011	Bolyai János Research Fellowship, Hungarian Academy of Sciences
2010 –	ERC Starting Grant
2011	Talentum Award, Central European Talent Support Foundation
2013 -	Bolyai János Research Fellowship, Hungarian Academy of Sciences

2014 Supervisor of the Year Prize, Pro Progressio Foundation for Education and Research

Teaching experiences

Lectures

- New experiments in nanophysics - for undergraduate and graduate students
- Transport in complex nanostructures - for undergraduate and graduate students
- Applied solidstate physics – for MSc students
- Measurement techniques – for BSc students

Lab and exercise courses

- Nanophysics seminar
- Condensed matter physics laboratory (4th-year physics students, BME)
- Solid state physics tutorial (3rd-year physics students, BME)
- Physics Laboratory IV (3rd-year physics students, BME)
- Experimental physics tutorial (for high school students)
- Condensed matter physics exercises (UniBasel),
- Condensed matter seminar for graduate and undergraduate students (UniBasel)

Supervision

Gergő Fülöp (BSc 2009, MSc 2011, Phd), Endre Tóvari (MSc 2011, phd), Zoltán Scherübl (MSc 2012, Phd), Attila Márton (BSc 2010, MSc 2013, Phd), Hodossy Szabolcs (BSc 2014), Fülöp Bálint (MSc 2014, Phd) at BME and additional 3 MSc project work at UniBasel

Founding ID

As principal investigator:

- Marie Curie Intra European Fellowship
  "Exploring entanglement by noise measurements in nanoelectronic devices" EU FP6 2006-2008
- Norway-OTKA NNF 78841
  "Fabrication and Electron Transport Study of Nanowire based Quantum Devices" OTKA 2009-2010, 78kEuro
- Marie Curie Reintegration Grant
  "Fabrication and Electron Transport Study of Nanowire based Quantum Devices" EU FP7 2009-2011, 45kEuro
- ERC Starting Grant
  "Cooper Pairs as a source of entanglement" ERC 2010-2015, 1496kEuro
- EU FP7 ICT Strep Network SE2ND
  " Source of Electron Entanglement in Nano Devices" EU FP7 2011-2014, 295.3kEuro for Budapest node
- Sciex " Novel Cooper pair splitter nanodevices", Swiss NMS, 2014, Home mentor
- Sciex "Developing ferromagnetic analyzer nanocircuits", Swiss NMS, 2012, Home mentor

Other scientific activity

2010 - 2013 Leader of the Nanoelectronics project of Research University grant of BME TÁMOP-4.2.1/B-09/1/KMR-2010-0002

2013 - Leader of the Nanoelectronics Joint Lab of BME&MFA, BME side

2014 - Member of the Physics Panel of Hungarian Scientific Research Fund, OTKA

Main international collaborations

Prof. Christian Schönenberger (Uni Basel, CH), Prof. Jesper Nygard (QDev, Niels Bohr, DK), Prof. Ireneusz Weymann (UAM, Poznan, PL), Prof. Chrsitoph Strunk (Regensburg,

DE), Prof. Alfredo Levy Yeyati (Madrid, Sp), Dr. Jan Martinek (Poznan, PL), Dr. József Cserti (ELTE, HU), Dr. Levente Tapasztó (MFA, HU), Dr. János Volk (MFA, HU), Dr. Attila Geresdi (TUDelft, NL), Prof. Jan van Ruitenbeek (UniLeiden, NL), Prof. G. Zaránd (BME, HU)

Research ID

(see details: **https://vm.mtmt.hu//www/index.php?lang=1&AuthorID=10012461**)
Based on Scopus 01/2015:
Number of publications (peer reviewed journal papers): 32
Total number of citations: 700, Independent citations: 587
Cumulated impact factor: 169.2
Hirsch-index: 14
Out of the 32 publications most of them appeared in high impact journals of the field: 1 in Nature, 7 in PRL, 1 in Nanoletters, 1 in ACS Nano, 11 in PRB, 2 in Nanoscale and 1 in APL. From the 587 independent citation >368 is related to publications where he is first/last/corresponding author.

Szabolcs Csonka's publications

1. Endre Tóvári , Miklós Csontos , Tamás Kriváchy , Péter Fürjes , Szabolcs Csonka
   Characterization of SiO2/SiNx gate insulators for graphene based nanoelectromechanical systems
   APPLIED PHYSICS LETTERS 105:(12) p. 123114. 4 p. (2014)
2. Fülöp G , d'Hollosy S , Baumgartner A , Makk P , Guzenko V A , Madsen M H , Nygård J , Schönenberger C , Csonka S
   Local electrical tuning of the nonlocal signals in a Cooper pair splitter
   PHYSICAL REVIEW B CONDENSED MATTER 90:(23) p. 235412. (2014)
3. Rakyta P , Tóvári E , Csontos M , Csonka Sz , Csordás A , Cserti J
   Emergence of bound states in ballistic magnetotransport of graphene antidots
   PHYSICAL REVIEW B CONDENSED MATTER AND MATERIALS PHYSICS 90: Paper 125428. (2014)
4. Scherubl Z , Palyi A , Csonka S
   Probing individual split Cooper pairs using the spin qubit toolkit
   PHYSICAL REVIEW B CONDENSED MATTER AND MATERIALS PHYSICS 89:(20) Paper 205439. 14 p. (2014)
   Dependent citation: 1 Total: 1

5. Csonka Szabolcs , Weymann Ireneusz , Zarand Gergely
   An electrically controlled quantum dot based spin current injector
   NANOSCALE 4:(12) pp. 3635-3639. (2012)
   Independent citation: 4 Dependent citation: 3 Total: 7

6. Erdélyi R , Madsen H M , Sáfrán Gy , Hajnal Z , Lukacs I E , Fülöp G , Csonka Sz , Nygard J , Volk J
   In-situ mechanical characterization of wurtzite InAs nanowires
   SOLID STATE COMMUNICATIONS 152:(19) pp. 1829-1833. (2012)
   Independent citation: 2 Dependent citation: 1 Total: 3

7. Makk P , Tomaszewski D , Martinek J , Balogh Z , Csonka S , Wawrzyniak M , Frei M , Venkataraman L , Halbritter A
   Correlation Analysis of Atomic and Single-Molecule Junction Conductance
   ACS NANO 6:(4) pp. 3411-3423. (2012)
   Independent citation: 18 Dependent citation: 3 Total: 21

8. Makk P , Balogh Z , Csonka S , Halbritter A
   Pulling Platinum Atomic Chains by Carbon Monoxide Molecules
   NANOSCALE 4:(15) pp. 4739-4745. (2012)
   Independent citation: 2 Dependent citation: 2 Total: 4

9. Neumann PL , Tóvári E , Csonka S , Kamarás K , Horváth ZE , Biró LP

Large scale nanopatterning of graphene
NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION B-BEAM INTERACTIONS WITH MATERIALS AND ATOMS 282: pp. 130-133. (2012)
Independent citation: 5 Dependent citation: 1 Total: 6

10. Peter Dahl Nissen , Thomas Sand Jespersen , Kasper Grove-Rasmussen , Attila Márton , Shivendra Upadhyay , Morten Hannibal Madsen , Szabolcs Csonka , Jesper Nygård
Comparison of gate geometries for tunable, local barriers in InAs nanowires
JOURNAL OF APPLIED PHYSICS 112:(8) p. 084323. (2012)
11. Soller H , Hofstetter L , Csonka S , Yeyati A Levy , Schönenberger C , Komnik A
Kondo effect and spin-active scattering in ferromagnet-superconductor junctions
PHYSICAL REVIEW B CONDENSED MATTER AND MATERIALS PHYSICS 85:(17) p. 174512. (2012)
Dependent citation: 6 Total: 6

12. Hofstetter L , Csonka S , Baumgartner A , Fülöp G , d'Hollosy S , Nygård J , Schönenberger C
Finite-Bias Cooper Pair Splitting
PHYSICAL REVIEW LETTERS 107:(13) Paper 136801. 4 p. (2011)
Independent citation: 22 Dependent citation: 6 Total: 28

13. Makk P , Visontai D , Oroszlany L , Manrique DZ , Csonka S , Cserti J , Lambert C , Halbritter A
Advanced Simulation of Conductance Histograms Validated through Channel-Sensitive Experiments on Indium Nanojunctions
PHYSICAL REVIEW LETTERS 107:(27) Paper 276801. 5 p. (2011)
Independent citation: 8 Dependent citation: 4 Total: 12

14. Halbritter A , Makk P , Mackowiak S , Csonka S , Wawrzyniak M , Martinek J
Regular Atomic Narrowing of Ni, Fe, and V Nanowires Resolved by Two-Dimensional Correlation Analysis
PHYSICAL REVIEW LETTERS 105:(26) Paper 266805. 4 p. (2010)
Independent citation: 7 Dependent citation: 6 Total: 13

15. Hofstetter L , Geresdi A , Aagesen M , Nygard J , Schönenberger C , Csonka S
Ferromagnetic Proximity Effect in a Ferromagnet–Quantum-Dot–Superconductor Device
PHYSICAL REVIEW LETTERS 104: p. 246804. (2010)
Independent citation: 30 Dependent citation: 3 Total: 33

16. Hofstetter L*, Csonka S* , Nygard J , Schonenberger C
Cooper pair splitter realized in a two-quantum-dot Y-junction
NATURE 461:(7266) pp. 960-963. (2009) *equal contribution
Independent citation: 123 Dependent citation: 15 Total: 138

17. Csonka S , Hofstetter L , Freitag F , Oberholzer S , Schonenberger C , Jespersen TS , Aagesen

M , Nygard J
Giant Fluctuations and Gate Control of the g-Factor in InAs Nanowire Quantum Dots
NANO LETTERS 8:(11) pp. 3932-3935. (2008)
Independent citation: 33 Dependent citation: 9 Total: 42

18. Geresdi A , Halbritter A , Csontos M , Csonka S , Mihály G , Wojtowicz T , Liu X , Jankó B , Furdyna JK
Nanoscale spin polarization in the dilute magnetic semiconductor (In,Mn)Sb
PHYSICAL REVIEW B CONDENSED MATTER AND MATERIALS PHYSICS 77:(23) Paper 233304. 4 p. (2008)
Independent citation: 5 Dependent citation: 4 Total: 9

19. Halbritter A , Makk P , Csonka S , Mihály G
Huge negative differential conductance in Au-H2 molecular nanojunctions
PHYSICAL REVIEW B CONDENSED MATTER AND MATERIALS PHYSICS 77:(7) Paper 075402. 8 p. (2008)
Independent citation: 20 Dependent citation: 2 Total: 22

20. Makk P , Csonka S , Halbritter A
Effect of hydrogen molecules on the electronic transport through atomic-sized metallic junctions in the superconducting state
PHYSICAL REVIEW B CONDENSED MATTER AND MATERIALS PHYSICS 78:(4) Paper 045414. 6 p. (2008)
Independent citation: 11 Dependent citation: 3 Total: 14

21. Halbritter A , Csonka S , Makk P , Mihaly G
Interaction of hydrogen with metallic nanojunctions
JOURNAL OF PHYSICS-CONFERENCE SERIES 61:(1) pp. 214-218. (2007)
Independent citation: 1 Total: 1

22. Csonka S , Halbritter A , Mihaly G
Pulling gold nanowires with a hydrogen clamp: Strong interactions of hydrogen molecules with gold nanojunctions
PHYSICAL REVIEW B CONDENSED MATTER AND MATERIALS PHYSICS 73:(7) Paper 075405. 6 p. (2006)
Independent citation: 46 Dependent citation: 7 Total: 53

23. Yanson I K , Shklyarevskii O I , Csonka Sz , van Kempen H , Speller S , Yanson A I , van Ruitenbeek J M
Atomic-size oscillations in conductance histograms for gold nanowires and the influence of work hardening
PHYSICAL REVIEW LETTERS 95:(25) Paper 256806. 4 p. (2005)
Independent citation: 34 Dependent citation: 5 Total: 39

24. Csonka SZ , Halbritter A , Mihály G , Shklyarevskii OI , Speller S , van Kempen H
Conductance of Pd-H nanojunctions
PHYSICAL REVIEW LETTERS 93:(1) Paper 016802. 4 p. (2004)
Independent citation: 69 Dependent citation: 10 Total: 79

25. Csonka SZ , Halbritter A , Mihály G , Jurdik E , Shklyarevskii OI , Speller S , van Kempen H
Field and temperature induced effects in the surface modification process
JOURNAL OF APPLIED PHYSICS 96:(11) pp. 6169-6174. (2004)
Independent citation: 3 Dependent citation: 1 Total: 4

26. A Halbritter , Sz Csonka , G Mihaly , O I Shklyarevskii , S Speller , H van Kempen
Hydrogen-assisted distortion of gold nanowires

(2004)

27. Halbritter A , Csonka SZ , Mihály G , Shklyarevskii OI , Speller S , van Kempen H
Quantum interference structures in the conductance plateaus of gold nanojunctions
PHYSICAL REVIEW B CONDENSED MATTER AND MATERIALS PHYSICS 69:(12) Paper 121411. 4 p. (2004)
Independent citation: 9 Dependent citation: 2 Total: 11

28. Csonka S , Halbritter A , Mihály GY , Jurdik E , Shklyarevskii OI , Speller S , van Kempen H
Fractional conductance in hydrogen-embedded gold nanowires
PHYSICAL REVIEW LETTERS 90:(11) Paper 116803. 4 p. (2003)
Independent citation: 60 Dependent citation: 5 Total: 65

29. Halbritter A , Csonka SZ , Mihály GY , Jurdik E , Kolesnychenko OYU , Shklyarevskii OI , Speller S , van Kempen H
Transition from tunneling to direct contact in tungsten nanojunctions
PHYSICAL REVIEW B CONDENSED MATTER AND MATERIALS PHYSICS 68:(3) Paper 035417. 7 p. (2003)
Independent citation: 32 Dependent citation: 4 Total: 36

30. Fazekas P , Penc K , Berger H , Forró L , Csonka SZ , Kézsmárki I , Mihály G
BaVS3: from spin gap insulator to non-Fermi liquid
PHYSICA B - CONDENSED MATTER 312: pp. 694-695. (2002)
Independent citation: 4 Dependent citation: 1 Total: 5

31. Halbritter A , Csonka S , Kolesnychenko OY , Mihaly G , Shklyarevskii OI , van Kempen H
Connective neck evolution and conductance steps in hot point contacts
PHYSICAL REVIEW B CONDENSED MATTER AND MATERIALS PHYSICS 65:(4) Paper 45413. 8 p. (2002)
Independent citation: 24 Dependent citation: 2 Total: 26

32. Csonka S , Halbritter A , Mihaly G , Shklyarevskii OI , Kolesnychenko OY , van Kempen H
Quantum point-contacts

OTKA-NWO Workshop Proceedings (2001)

33. Kézsmárki I , Csonka SZ , Berger H , Forró L , Fazekas P , Mihály G
Pressure dependence of the spin gap in BaVS3
PHYSICAL REVIEW B CONDENSED MATTER AND MATERIALS PHYSICS 63:(8) Paper 081106. (2001)
Independent citation: 12 Dependent citation: 9 Total: 21