

CV of Adam Gali

Personal data

Name Adam Gali
Position Professor
Current institution Department of Atomic Physics,
Budapest University of Technology and Economics
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Date of birth 1973-02-28

Education

1996 MSc degree in electric engineering, BME, Hungary
2001 PhD in Physics “Study of point defects in wide band gap semiconductors by means of quantum mechanical calculations”, BME Hungary

Employment

1999-2010 Postdoctoral researcher (intermissions) BME, Hungary
2002-2007 Postdoctoral researcher (intermissions) Linköping University, Sweden
2007-2009 Visiting Scientist (intermissions) Harvard University, USA
2010- Research Advisor Wigner Research Centre for Physics,
Hungarian Academy of Sciences
2010-2019 Associate professor (part time) BME, Hungary
2019- Professor (part time) BME, Hungary

Awards and prizes

1995 Special Award from the Rector of the Technical University of Budapest
1995-1996 Scholarship of the Republic
1994-1996 Award of the Hungarian Technical Progress Foundation
1996 Award of György Ferenczi Foundation for the young talented solid state physicists
1997 Tempus Scholarship
1999-2000 Scholarship of George Soros
2001 Award of the Hungarian Academy of Sciences for the young researcher
2001-2004 Postdoctoral Scholarship of György Békésy
2003 International Dennis Gabor Award
2004-2007 Postdoctoral Research Scholarship of János Bolyai
2007 Eötvös Scholarship of the Hungarian State
2008 Talentum-Award of the Hungarian Academy of Sciences
2008 Bolyai-Plaque from the Hungarian Academy of Sciences
2008 Cross of Merit of the Hungarian Republic, Gold grade
2008-2009 HAESF Fellowship at Harvard University

2009-2011	Postdoctoral Research Scholarship of János Bolyai
2010-2015	Lendület-award from the Hungarian Academy of Sciences
2011-2013	Guest Professor at Max-Planck-Institute Stuttgart (Germany)
2012-2017	Guest Professor at Linköping University (Sweden)

Research interest

- quantum mechanical calculation on defects in silicon, wide band gap semiconductors and semiconductor nanostructures for solar cells and quantum information processing
- fabrication of silicon carbide (nano)powder and related materials for bioimaging

Teaching activity

- Computational simulations in solids at the atomic scale
- Trends in materials sciences

Students supervised

- MSc students: Ádám Buruzs (2005), Tamás Hornos (2005), András Márton Vörös (2009), Áron Szabó (2011), Bálint Somogyi (2012), Gergő Thiering (2013), Gyula Károlyházy (2014), András Csóré (2016), Péter Udvarhelyi (2016), Boglárka Móricz (2017), Terézia Fanni Oláh (2018), Balázs Zoltán Juhász (2018)
- PhD students: Tamás Hornos (2009), Márton András Vörös (2013), Krisztián Szász (2015), Dávid Beke (2016), Viktor Ivády (2016), Bálint Somogyi (2017), Gergő Thiering (2018), Gyula Károlyházy, András Csóré, Péter Udvarhelyi

Memberships and professional service

- Member of Roland Eötvös Physical Society
- Member of Materials Research Society (USA)
- Member of American Physical Society
- vice representative of Hungary in Quantum Community Network

Grants, fellowships, projects

2002-2005	OTKA No. F38357: Theoretical investigation of point defects, their agglomerates and their effects on optical properties in irradiated silicon carbide by means of quantum mechanical calculations
2004-2007	MTA-DFG bilateral project No. 112: Formation and passivation mechanisms of charge carrier traps during thermal oxidation of 4H-SiC
2007-2011	OTKA No. K67886: Investigation of point defects in wide band gap materials by methods beyond the standard density functional theory
2008-2010	MTA-DFG bilateral project No. 436: Investigation of semiconductor nanocrystals embedded in a SiO ₂ matrix
2011-2014	EU FP7 No. 270197: DIAMANT-Diamond based atomic nanotechnologies
2012-2016	OTKA No. K101819: Design, fabrication and analysis of luminescent silicon

2012-2016	carbide nanocrystals for in vivo biomarker applications OTKA No. K106114: Development of novel silicon carbide nanomarkers and more effective glutamate and GABA uncaging materials for measurement of neuronal network activity and dendritic integration with three-dimensional real-time two-photon microscopy
2013-2017 2015-2018	EU FP7 No. 611143: DIADEMS-Diamond devices enabled metrology and sensing Visegrad Group (V4) + Japan Joint Research Project on Advanced Materials: Nanophotonics with metal - group IV-semiconductor nanocomposites: From single nanoobjects to functional ensembles (NaMSeN)
2017-2019	NVKP project: Development of fluorescent dyes and microscope for the treatment of epilepsy; NKFIH Grant No. NVKP_16-1-2016-0043
2017-2021	NKP National Quantumtechnology Program: Creation and distribution of quantum bits and development of quantum information networks; NKFIH Grant No. 2017-1.2.1-NKP-2017-00001
2018-2021	EU QuantERA project: Scalable Electrically Read Diamond Spin Qubit Technology for Single Molecule Imagers; NKFIH Grant No. NN127889
2018-2021	EU QuantERA project: Spin-based nanolytics - Turning today's quantum technology research frontier into tomorrow's diagnostic devices; NKFIH Grant No. 127902
2018-2021	EU H2020 DLV-820394: ASTERIQS-Avancing Science and Technology through diamond Quantum Sensing
2019-	KKP Élvonal Program: Quantum-Coherent Materials; NKFIH Grant No. KKP129866

Invited talks (selected)

2018	<i>Ab initio theory of intersystem crossing in NV center in diamond</i> , OSA Incubator Meeting, Defects by Design: Quantum Nanophotonics in Emerging Materials, Washington, DC. (USA), October 28-30, 2018
2017	<i>Dopant-Vacancy Centers Spin in Diamond: Ab Initio Theory</i> , Gordon Research Conference: Quantum Sensing, Hong Kong (China), July 2-6, 2017
2016	<i>Design and characterization of nanostructures: theory and experiment hand in hand</i> , European Materials Research Society Fall Meeting, Warsaw (Poland), September 18-22, 2016
2016	<i>Ab initio theory on point defects acting as qubits</i> , Gordon Research Conference on Defects in Semiconductors, Colby-Sawyer College (USA), August 14-19, 2016
2015	<i>Defects in diamond and silicon carbide for quantum computing and sensing</i> , International Conference on Defects in Semiconductors, Espoo (Finland), July 26-31, 2015
2015	<i>Ab-initio theory of solid state quantum bits</i> , Nothing is perfect - The quantum mechanics of defects, Ascona (Switzerland), April 26-29, 2015
2014	<i>Quantum mechanical simulations of solid state quantum bits</i> , Harvard Quantum Optics Center Seminar, Harvard University, Boston (USA), March 6, 2014
2014	<i>Qubit control in phosphorus doped silicon nanowires</i> , APS March Meeting, Denver (USA), March 3-7, 2014
2011	<i>Transition metal defects in cubic and hexagonal polytypes of SiC</i> in International Conference of Silicon Carbide and Related Materials 2011, Cleveland (USA), September 10-16, 2011
2011	<i>Ab initio theory of nitrogen-vacancy defect in diamond</i> at 476th Wilhelm and Else

Heraeus Seminar - Diamond - spintronics, photonics, bio-applications,
Physikzentrum Bad Honnef (Germany), April 4-7, 2011

Languages

English (master), German (master reading, conversational speaking), Russian (beginner)

Scientific impact (as of 06/2019)

247 papers in refereed journals

50+ invited conference talks and seminars

Total number of independent citations: 4168

H-index: 32

Complete list of publications:

<https://m2.mtmt.hu/gui2/?type=authors&mode=browse&sel=10002866&view=simpleList&paging=1;1000>

Five selected publications

- 1) Thiering, G ; Gali, A
Ab Initio Magneto-Optical Spectrum of Group-IV Vacancy Color Centers in Diamond
PHYSICAL REVIEW X 8 : 2 Paper: 021063 , 17 p. (2018);
- 2) Gali, A ; Demjan, T ; Voros, M ; Thiering, G ; Cannuccia, E ; Marini, A
Electron-vibration coupling induced renormalization in the photoemission spectrum of diamondoids
NATURE COMMUNICATIONS 7 Paper: 11327 , 9 p. (2016)
- 3) Beke, D ; Szekrenyes, Zs ; Czigany, Zs ; Kamaras, K ; Gali, Adam
Dominant luminescence is not due to quantum confinement in molecular-sized silicon carbide nanocrystals
NANOSCALE 7 : 25 pp. 10982-10988. , 7 p. (2015)
- 4) Castelletto, S ; Johnson, B ; Zachreson, C ; Beke, D ; Balogh, I ; Ohshima, Takeshi ; Aharonovich, I ; Gali, A
Room Temperature Quantum Emission from Cubic Silicon Carbide Nanoparticles
ACS NANO 8 : 8 pp. 7938-7947., 10 p. (2014)
- 5) Gali, A ; Fyta, M ; Kaxiras, E
Ab initio supercell calculations on nitrogen-vacancy center in diamond: Electronic structure and hyperfine tensors
PHYSICAL REVIEW B 77 : 15 Paper: 155206 , 12 p. (2008)