

**György MIHÁLY** professor of physics

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Department of Physics  
 Budapest University of Technology and Economics  
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 Hungary

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Year of birth: 1951

#### Qualification

2001	Ordinary Member of the Hungarian Academy of Sciences
1995	Corresponding Member of the Hungarian Academy of Sciences
1986	Doctor of Sciences, Hungarian Academy of Sciences
1978	dr. univ, Roland Eötvös University of Science, Budapest
1975	Diploma of Physics (MSc), Roland Eötvös University of Science, Budapest

#### Employment

1993 -	Budapest University of Technology and Economics, Faculty of Natural Sciences, Institute of Physics, Department of Physics professor of physics head of the Department of Physics (1993-2012) director of the Institute of Physics (2012-2015)
1975 - 1993	Research Institute for Solid State Physics, Budapest postdoctoral fellow/research associate/senior research associate/scientific advisor

#### Important experiences abroad

1997 - 2003	Ecole Polytechnique Federale de Lausanne, Switzerland – visiting professor 10 x 2 months
1987 - 1989	Department of Physics, University of California at Los Angeles, USA – visiting researcher 2 years
1986 - 1987	Centre National de la Recherche Scientifique, Grenoble, France - visiting researcher 1 year
1979 - 1980	C.E.A., Centre d Etudes Nucleaires des Fontenay aux Roses (Paris), France – postdoc 1 year

#### Research interest

nanometer-sized memristors  
 spin-polarized transport in nanostructures  
 metallic multilayers  
 spin- and orbital ordering in d-electron systems  
 2-dimensional superconductors  
 strongly correlated electron systems  
 phase diagram of low-dimensional electron systems  
 collective excitations of density waves (CDW, SDW)  
 transport phenomena of quasi-one-dimensional organic conductors

**Academic awards**

2010	Széchenyi Prize
2008	Simonyi Károly Prize (Hungarian Academy of Sciences)

**Memberships and professional service**

2020 -	head of the Section of Physical Sciences of the Hungarian Academy of Sciences
2007 - 2019	member of the Hungarian Doctoral Council president (2011 – 2013), honorary president (2014 - 2019)
2007 - 2019	chair of the University Habilitation Committee and Doctoral Council (BME)
2005 - 2020	head of the Doctoral School of Physics (BME)
2012 - 2020	head of the HAS-BUTE Condensed Matter Research Group
2007 - 2011	member of the HAS-BUTE Condensed Matter Research Group
2003 - 2006	head of the HAS-BUTE Electron Transport in Solids Research Group
1996 - 2002	member of the HAS-BUTE Condensed Matter Research Group

**Teaching**

2012 -	Physics-3 (MSc) – for electrical engineering students – BME
2017 -	Fundamentals of solid state physics (BSc) – BME
1994 - 2015	Fundamentals of solid state physics (BSc) / Introduction to solid state physics (BSc) – BME
2014 - 2017	Physics M1 (MSc) – for mechanical engineering students – BME
1994 - 2013	Condensed matter physics laboratory (MSc) – BME
2009 - 2013	Applied solid state physics (MSc) – BME
2003	Nanophysics – PhD course at Ecole Polytechnique Federale de Lausanne, Switzerland
1993 - 2001	Spin- and charge-density waves (MSc) – BME (every second year)
1991 - 1996	Solid state physics laboratory (MSc) – Roland Eötvös University of Sciences, Budapest
1991 - 1993	Correlated electron systems (MSc) – Roland Eötvös University of Sciences, Budapest
1989	Spin and charge density waves (MSc) – University of California at Los Angeles, USA
1988 - 1989	Physics 180C (MSc) advanced laboratory course – University of California at Los Angeles, USA
1988	Physics laboratory course (BSc) – University of California at Los Angeles, USA Correlated electron systems (MSc) – University of California at Los Angeles, USA
1987	Physics laboratory course (BSc) – Université Joseph Fourier, Grenoble

**Supervision**

Gubicza Ágnes (MSc 2013, PhD 2017), Geresdi Attila (MSc 2007, PhD 2011), Demkó László (MSc 2002, PhD 2010), Csontos Miklós (MSc 2002, PhD 2007), Csonka Szabolcs (MSc 2001, PhD 2006), Kézmárki István (MSc 1999, PhD 2003), Halbritter András (MSc 1999, PhD 2003), Zámboreszky Ferenc (MSc 1998, PhD 2000), Szeghy Géza (PhD 2000), Giamal Abdussalam (PhD 1999), Soczó Csaba (MSc 1998), Pethes Ildikó (MSc 1995), Fülöp Gábor (MSc 1995), Czigány Zsolt (MSc 1992), Gaál Richárd (MSc 1992, PhD 1997), Belezny Ákos (PhD 1994).

for details see:

[http://dept.physics.bme.hu/sites/dept.physics.bme.hu/files/users/MihályGyörgy/mihaly\\_supervise.html](http://dept.physics.bme.hu/sites/dept.physics.bme.hu/files/users/MihályGyörgy/mihaly_supervise.html)

**Publication list** <https://m2.mtmt.hu/gui2/?type=authors&mode=browse&sel=10000944>

Number of publications (peer reviewed journal papers): 139  
Total number of citations > 3000  
Cumulated impact factor > 400  
Hirsch-index: 31

## 10 selected publications

- B. Sánta, Z. Balogh, Á. Gubicza, L. Pósa, D. Krisztián, G. Mihály, M. Csontos, A. Halbritter  
*Universal  $1/f$  type current noise of Ag filaments in redox-based memristive nanojunctions*  
Nanoscale **11**, 4719 (2019). Impact Factor: 7,233
- Á. Gubicza, D.Zs. Manrique, L. Pósa, C.J. Lambert, G. Mihály, M. Csontos, A. Halbritter  
*Asymmetry-induced resistive switching in Ag-Ag<sub>2</sub>S-Ag memristors enabling a simplified atomic-scale memory design*  
Scientific Reports **6**, 30775 (2016). IF: 5,228
- Á. Gubicza, M. Csontos, A. Halbritter, G. Mihály  
*Non-exponential resistive switching in Ag<sub>2</sub>S memristors: a key to nanometer-scale non-volatile memory devices*  
Nanoscale **7**, 4394 (2015). IF: 7,367
- Á. Gubicza, M. Csontos, A. Halbritter, G. Mihály  
*Resistive switching in metallic Ag<sub>2</sub>S memristors due to a local overheating induced phase transition*  
Nanoscale **7**, 11248 (2015). IF: 7,760
- A. Geresdi, M. Csontos, A. Gubicza, A. Halbritter, G. Mihály  
*Fast operation of nanometer-scale metallic memristors: highly transparent conductance channels in Ag<sub>2</sub>S devices*  
Nanoscale **6**, 2613 (2014). IF: 7,394
- A. Geresdi, A. Halbritter, A. Gyenis, P. Makk, G. Mihály  
*From stochastic single atomic switch to nanoscale resistive memory device*  
Nanoscale **3**, 1504 (2011). IF: 5,914
- S. Csonka, A. Halbritter, G. Mihály  
*Pulling gold nanowires with a hydrogen clamp: Strong interactions of hydrogen molecules with gold nanojunctions,*  
Physical Review B **73**, 075405 (2006). IF: 3,107
- M. Csontos, G. Mihály, B. Jankó, T. Wojtowicz, X. Liu, J.K. Furdyna  
*Pressure-induced Ferromagnetism in (In,Mn)Sb Dilute Magnetic Semiconductor*  
Nature Materials **4**, 447 (2005). IF: 15,941
- Sz. Csonka, A. Halbritter, G. Mihály, O.I. Shklyarevskii, S. Speller, H. van Kempen  
*Conductance of Pd-H nanojunctions,*  
Physical Review Letters **93**: 016802 (2004). IF: 7,218
- G. Mihály, I. Kézsmárki, F. Zámorszky, L. Forró  
*Hall effect and conduction anisotropy in the organic conductor (TMTSF)<sub>2</sub>PF<sub>6</sub>*  
Physical Review Letters **84**, 2670 (2000). IF: 6,642

**Grants & projects supervised**

Period	Title and grant source	support in USD
2017-2020	HAS-BUTE Condensed Matter Research Group Hungarian Academy of Sciences	560.000
2015-2018	Charge dynamics in nanostructures OTKA NK112918	250.000
2012-2017	HAS-BUTE Condensed Matter Research Group Hungarian Academy of Sciences	650.000
2010-2014	Spin injection, detection and manipulation in nanoscale devices KTIA-OTKA_A_08-2-2010-0009 (CNK80991)	460.000
2008-2012	Spin polarization in nanostructures OTKA NK72916	142.000
2006-2009	Hydrostatic pressure induced changes in the electronic structure of solids OTKA K62441	50.000
2005-2007	Spin- and charge dynamics in solids and nanostructures OTKA TS 049881 - Hungarian Scientific Research Fund (Science School)	384.000
2003-2006	HAS-BUTE Electron Transport in Solids Research Group Hungarian Academy of Sciences	180.000
2002-2004	Collective Electron Excitations in Solids OTKA TS 040878 - Hungarian Scientific Research Fund (Science School)	240.000
2002-2004	Spin- and charge dynamics in reduced dimensions OTKA T 037451 - Hungarian Scientific Research Fund	120.000
2000-2002	Electron transport in nanostructures NWO-31769 Hungarian - Dutch Research Cooperation	50.000
2001-2004	Nanophysics NKFP 2001-3/064 - 15. subproject - Ministry of Education	80.000
2000-2001	Development of low-temperature techniques (He liquefier) MU-00247/2000 - Ministry of Education	90.000
1999-2000	Orbital ordering in magnetic materials AKP 98-66 2,2 - Hungarian Academy of Sciences	14.000
1998-2001	Nonlinear quantum effects in point-contacts OTKA T 026327 - Hungarian Scientific Research Fund	55.000
1998	Development of high frequency instruments OTKA M 02496 - Hungarian Scientific Research Fund	12.000
1997-2000	Preparation, investigation and application of new materials FKFP B-10/97 - II. subproject - Ministry of Education	45.000
1997-2000	Dimensionality and electron correlation in solids FKFP 0355/97 - Ministry of Education	45.000

1997-1998	High frequency impedance- and susceptometer system OMFB MU-0058 subproject - National Committee for Technological Development	80.000
1995-1998	Correlated electron systems in solids OTKA T 015552 - Hungarian Scientific Research Fund	100.000
1995-1996	Development undergraduate and PhD research facilities (TUB) FEFA-IV/1378 - I subproject - Word Bank	30.000
1994-1995	Development of educational laboratories (TUB & CRIP) FEFA-III/857 - Word Bank	30.000
1994-1995	Vortex State of Organic Superconductors PHARE ACCORD 0249	70.000
1994-1995	Helium liquefier (purchase and installation at the TUB) FEFA-III/653 II subproject - Word Bank	220.000
1993-1996	Dielectric properties of density waves OTKA T 007277	35.000
1993-1996	Spin density waves US-Hungarian Joint Found No. 264 - NSF/USA	35.000
1993-1994	Low temperature cryomagnetic system OTKA A057 - Hungarian Scientific Research Fund	130.000