

**Short CV of Gabor Stepan****Personal**

Gabor Stepan  
 Workplace Budapest University of Technology and Economics (BME)  
 Born Budapest, 13 December 1953  
 Home Page <http://www.mm.bme.hu/~stepan/>

**Degrees**

1982 PhD, Hungarian Academy of Sciences (MTA)  
 1978 MSc, Budapest University of Technology and Economics (BME)

**Qualifications**

2001 Member of the Hungarian Academy of Sciences  
 1995 Dr.habil., Budapest University of Technology and Economics (BME)  
 1994 DSc, Hungarian Academy of Sciences (MTA)

**Positions**

1995- Professor of Applied Mechanics (BME)  
 1991-1995 Associate Professor, Department of Applied Mechanics (BME)  
 1981-1991 Research Associate, Research Group on Mechanics (MTA)  
 1980-1981 Design Engineer, Machine Tool Factory, Csepel Works

**Administrative functions**

2008-2012 Dean of the Faculty of Mechanical Engineering (BME)  
 1995-2018 Head of Department, Department of Applied Mechanics (BME)

**Visiting Positions (time period)**

2008 Universite Pierre et Marie Curie, Paris 6, France (**1 month**)  
 1996 University of Bristol, UK (**1 month**)  
 1994-1995 CalTech, Pasadena, USA (**10 months**, Fulbright scholarship)  
 1992-1993 Delft University of Technology, The Netherlands (**2 months**)  
 1991 Technical University of Denmark, Lyngby (**4 months**)  
 1990 Politecnico di Milano, Italy (**1 month**)  
 1988-1989 University of Newcastle upon Tyne, UK (**18 months**)

**International Prizes/Awards/Academy memberships**

2018- Foreign member of Estonian Academy of Sciences  
 2017- Fellow (SIAM Society for Industrial and Applied Mathematics)  
 2015 Thomas K. Caughey Dynamics Award (ASME Applied Mechanics Division)  
 2014- Honorary Professor of Nanjing University of Aeronautics and Astronautics  
 2013- Member of Academia Europaea (The Academy of Europe)  
 2012- Associate member of CIRP (International Academy for Production Engineering)  
 2011 Szechenyi Prize (Highest scientific excellence award of the Hungarian Republic)  
 2007 Simonyi Engineering Prize (Charles Simonyi Fund for the Arts and Sciences)

**Research areas**

*Analytical mechanics:* stability theory, nonlinear vibrations, equations of motion

*Differential equations:* bifurcation theory, delay-differential equations, chaos

*Applications in mechanical engineering:* nonlinear dynamics of wheels, vibration & stability issues of robots, force control, stabilization of unstable equilibria, human & robotic balancing, rehabilitation robotics, machine tool vibrations, traffic dynamics

The most renowned contributions to the analysis and modelling of delayed dynamical systems are the

**Micro-chaos** (small-scale chaotic oscillations in delayed digitally controlled systems),

**Semi-discretization of delay systems** (powerful numerical technique for periodic delay systems),

**Act-and-wait control** (stabilization of delayed systems with time-periodic gains),

**Delayed Mathieu-equation paradigm** (parametric excitation of delayed oscillator),

**Period doubling chatter, Flyover effect, Stability islands** (all related to machine tool technology).

**Publication list at** <https://vm.mtmt.hu/search/slist.php?lang=0&AuthorID=10000019>

**Teaching and Tutoring**

BSc/MSc level Dynamics, Vibrations, Dynamics of Machines, Nonlinear Vibrations (BME)

PhD level Analytical Mechanics (BME), Lagrangian Dynamics (CalTech 1995)

Delay Models in Engineering (Barcelona 2011, Grenoble 2009, Dobbiaco 2006, Udine 2006, CISM 2004).

Supervisor of 15 PhD theses at BME, supervisor of further 7 PhD students who transferred to and received PhD in USA (CalTech, Cornell, Chicago, Auburn).

**Major contributions to early careers of excellent researchers outside Hungary**

1. **George Haller** started PhD with Gabor Stepan in 1989, transferred to Pasadena in 1991 and received PhD in 1994 at CalTech; 2005-2008: full professor in Mech Eng MIT, 2007-2009: Director of Morgan Stanley Analysis; 2009- Head of Mech Eng at McGill, 2012- full professor at ETH Zurich.
2. **Eniko Enikov** started PhD with Gabor Stepan in 1993, transferred to Univ of Illinois at Chicago in 1995, received PhD in 1998 there; 2004- assoc prof, 2013- full prof in Mech Eng Univ of Arizona.
3. **Gabor Orosz** received MSc in 2002 at BME supervised by Stepan; after joint publications with Stepan he received PhD in 2006 at Eng Math Univ Bristol; 2005-2010: postdoc at Univ. Exeter and UCSB; 2010- tenure track, 2017- tenured associate professor in Mech Eng Univ Michigan (Ann Arbor).
4. **Laszlo Kovacs** received PhD in 2007 at BME under the supervision of Stepan, supported by EU FP5 project RehaRob in 2001-2004, 2010- researcher at McGill University.
5. **Robert Szalai** received PhD in 2006 at BME under the supervision of Gabor Stepan; 2004-2005: Fulbright Scholar at Mech Eng MIT; 2007-2010 postdoc, 2010- lecturer at Eng Math, Univ Bristol.
6. **Giuseppe Habib** joint PhD under supervision of G Stepan and G Rega (Univ Rome), received PhD in 2013, 2013- postdoc at Mech Eng Univ Liege, 2016 received Marie Curie fellowship.

**International Research Projects cca. **6,800,000 Euro (principal investigator PI or team leader TL)****

2020-2021	ERC-2019-PoC/862308 'ProExcer' (European Research Council Proof of Concept Grant) Projectile exciter for noiseless environment <b>150,000 Euro (PI)</b>
2014-2019	ERC-2013-AdG/340889 'SIREN' (European Research Council Advanced Grant) Stability Islands: Performance Revolution in Machining <b>2,573,000 Euro (PI)</b>
2016-2018	H2020-MSCA/704133-PIEZOMACH 'Piezoelectric Vibration Absorber for Machining Applications' Marie Skłodowska-Curie Individual Fellowship for Dr Giuseppe Habib, <b>146,239 Euro (PI)</b>
2016-2017	MCMS-0116K01 'Constant/Periodic Delays in Control of Mechanical Systems' Fund of Nanjing University of Aeronautics and Astronautics <b>20,000 Euro (PI)</b>
2013-2015	Chinese-Hungarian bilateral RTD project contract n° TET_12_CN_1-2012-0012 'Control of Unstable Elastic Structures' <b>25,300 Euro (PI)</b>
2010-2013	EU FP7-2010-NMP-ICT-FoF, grant n° 260073 'Plug and Produce Components for Optimum Dynamic Performance Manufacturing Systems - DYNXPPTS' <b>245,000 Euro (TL)</b>
2010-2012	Hungarian-Singaporean bilateral RTD project contract n° TET_08_SG_STAR 'Cognitive Stroke Movement Therapy Systems through Integration of Wearable Haptic Interfaces - COSMOSYS' <b>169,000 Euro (PI)</b>
2008-2012	EU EACEA EU-USA-Atlantis-2008 contract n° 2008-1767CPT Advanced International Studies in Mechanics of Micro- & Nanosystems - AISMMN' <b>180,000 Euro (PI)</b>
2007-2010	EU FP6 contract n° 045530 'Autonomous Collaborative Robots to Swing and Work in Everyday Environment - ACROBOTER' <b>2,313,000 Euro (PI)</b>
2005-2011	NKTH NAP V2.3.3-1 'Development of Units for New Nuclear Energy Technologies' (associated to EU ITER fusion reactor) <b>317,000 Euro (TL)</b>
2000-2003	EU FP5-IST contract n° 13109 'Supporting Rehabilitation of Disabled Using Robots for Motion Therapy - REHAROB' <b>450,000 Euro (TL)</b>

**National Projects (PI), Hungarian National Science Foundation OTKA, Hung. Acad. Sci. MTA)**

2017-2022	MTA-BME grant n° TKI04113 'Dynamics of Vehicles and Machines' (PI)
2012-2016	MTA-BME grant n° 2011TKI395 'Safety improvements in transportation' (PI)
2012-2015	OTKA grant n° K101714 'Contact parameter identification of machines based on nonlinear dynamical experiments' (PI)
2007-2011	OTKA grant n° K68910 'Mitigation of self-excited vibrations' (PI)
2007-2011	MTA-BME grant n° 2006TKI111 'Surface transport: Reduction of noise' (PI)
2003-2006	OTKA grant n° T0433682 'Nonlinear oscillations of coupled continuous and discrete systems' (PI)
2002-2006	MTA-BME grant n° 2001TKI55 'Dynamics of Machines and Vehicles' (PI)

**Selected Industrial Contracts (PI)**

2011	Vibration elimination of strollers (Bugaboo Ltd, NL)
2009	Checking the flywheel of main pump (Paks Nuclear Power Station, HU)
2004	Vibration analysis of servo steering (Knorr-Bremse, HU)

**Journals (editorial board membership / associate editorship)**

2014-	Nonlinear Dynamics
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2013-2018	ASME Journal of Computational and Nonlinear Dynamics
2007-2019	Physica D
2006-	Mechanism and Machine Theory
2005-2011	Philosophical Transactions of the Royal Society A
1998-2012	Meccanica
1995-2017	Journal of Nonlinear Science
1994-2014	Journal of Vibration and Control

**Societies** (memberships, functions)

<i>GaMM</i>	1990-	Association of Applied Mathematics and Mechanics, member
<i>EuroMech</i>		European Mechanics Society, member
	2012-2017	Member of European Nonlinear Oscillations Conference Committee
	2005-2009	Member of European Solid Mechanics Conference Committee,
<i>IFTToMM</i>		International Federation for Promotion of Mechanism and Machine Sciences
	1995-2003	Elected Member of the Executive Council
	2002-2006	Chairman of Technical Committee on Nonlinear Oscillations
<i>IUTAM</i>		International Union of Theoretical and Applied Mechanics, member
	2005-2013	Elected member of Symposia Panel for Solid Mechanics
	2011-2020	Elected member of Executive Congress Committee
<i>CISM</i>	2001-	International Centre for Mechanical Sciences, member of Scientific Council
<i>HBS</i>		Hungarian Biomechanics Society
	2004-2006	Founder and first chairman
<i>SIAM</i>	2009-	Society for Industrial and Applied Mathematics, member, 2017 – elected fellow
<i>ASME</i>	2013-	American Society of Mechanical Engineers, member

**Scientometry (career)** **Citations (all)** **Citations (independent)** **H-index** **Papers (all)**

<i>Web of Science</i>	4363	3743	35	221
<i>Scopus</i>	5775	4422	41	313
<i>Google Scholar</i>	11772	n.a.	55	504

**Selected research monographs, edited thematic and special issues**

1. **Stepan G**, Retarded Dynamical Systems, Longman/Wiley, London/NY, 1989. 150p. (**WoS cite 632, Google Scholar cite 1192**)
2. Insperger T, **Stepan G**, *Semi-Discretization for Time-Delay Systems. Stability and Engineering Applications*, Springer, NY, 2011. 174 p. ISBN:978-1-4614-0334-0 (**WoS cite 222, GScholar 399**).
3. Insperger T, **Stepan G**, Time-delay Systems in Engineering I-II. Editors of Thematic Issue in *International Journal of Dynamics and Control* 2(1-2) (2014) 11+10 articles.
4. Orosz G, Wilson RE, **Stepan G**, Traffic jams: dynamics and control 2010, Editors of theme issue in *Philosophical Transactions of The Royal Society A – Mathematical Physical and Engineering Sciences* 368 (2010) 10 articles, doi:10.1098/rsta.2010.0205.
5. **Stepan G**, Delay effects in brain dynamics. Editor of theme issue in *Philosophical Transactions of The Royal Society A – Mathematical, Physical and Engineering Sciences* 367 (2009) 11 articles, doi:10.1098/rsta.2008.0279.
6. Kalmar-Nagy T, Olgac N, **Stepan G**, Time-delay systems, Editors of theme issue in *Journal of Vibration and Control* 16 (2010) 15 articles, doi:10.1177/1077546309341133.
7. Diaz J, **Stepan G**, In Memoriam M Farkas, *Differential Equations and Dynamical Systems* 17 (2009).

**Granted patents**

1. **Stepan G**, Kovacs LL, Wohlfart R , Jurak M, Bachrathy D, Toth A, Payload suspension system. WO2011/012916
2. **Stepan G**, Kovacs LL, Wohlfart R , Jurak M, Bachrathy D, Toth A, Suspended payload platform thrusted by fluid mass flow generators. WO2011/012915

**Organisation of international conferences**

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|------|---|
| 2018 | 14 <sup>th</sup> IFAC Workshop on Time Delay Systems (TDS18, Budapest) ( <b>chairman</b> )  |
| 2018 | 8 <sup>th</sup> CIRP Conference on High Performance Cutting (HPC18, Budapest) ( <b>chairman</b> )                                       |
| 2017 | 9 <sup>th</sup> European Nonlinear Dynamics Conference (ENOC' 17, Budapest) ( <b>chairman</b> )   |
| 2010 | IUTAM Symposium on Dynamics, Modeling and Interaction Control in Virtual and Real Environments (Budapest) ( <b>proposer, chairman</b> ) |
| 2009 | BIRS Workshop on <i>Noise, Time Delays &amp; Balance</i> (Banff, Canada) ( <b>proposer, co-chairman</b> )                               |
| 2006 | 6 <sup>th</sup> European Solid Mechanics Conference ESMC (Budapest) ( <b>chairman</b> )   |

**Oct, 2019**