

# Prof. László Kollár

Full Professor

Savaria Institute of Technology  
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## ACADEMIC DEGREES

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- 06/2016**      **Habilitation in Engineering**  
Szent István University, Gödöllő, Hungary
- 06/2002**      **M.Sc. in Mathematics**  
Title of thesis: *Numerical Stability Analysis of a Respiratory Control System Model*  
The University of Texas at Dallas, Richardson, Texas, USA
- 02/2002**      **Ph.D. in Mechanical Engineering**  
Title of dissertation: *Dynamics of Digitally Controlled Unstable Mechanical Systems*  
Budapest University of Technology and Economics, Budapest, Hungary
- 06/1997**      **M.Sc. in Mechanical Engineering**  
Title of thesis: *Az egyensúlyozás dinamikája (Dynamics of Balancing; in Hungarian)*  
Budapest University of Technology and Economics, Budapest, Hungary

## WORKPLACES

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- 2019 –**      **Full Professor**  
Savaria Institute of Technology, Faculty of Informatics, Eötvös Loránd University, Szombathely, Hungary
- 2017 – 2019**      **Associate Professor**  
Savaria Institute of Technology, Faculty of Informatics, Eötvös Loránd University, Szombathely, Hungary
- 2014 – 2017**      **Associate Professor**  
Department of Mechanical Engineering, Savaria Institute of Technology, Faculty of Natural and Technical Sciences, University of West Hungary, Szombathely, Hungary
- 2012 – 2014**      **Research Fellow**  
School of Computing and Engineering, University of Huddersfield, Huddersfield, UK
- 2002 – 2012**      **Research Professor on grant / Postdoctoral Fellow (until 2005)**  
Industrial Chair on Atmospheric Icing of Power Network Equipment (CIGELE) and  
Canada Research Chair on Atmospheric Icing Engineering of Power Network (INGIVRE)  
University of Quebec at Chicoutimi, Chicoutimi, Quebec, Canada
- 2001 – 2002**      **Teaching Assistant**  
Department of Mathematical Sciences, The University of Texas at Dallas, Richardson, Texas, USA
- 1997 – 2001**      **Ph.D. student**  
Department of Applied Mechanics, Budapest University of Technology and Economics, Budapest, Hungary

## **RESEARCH INTERESTS**

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- **Dynamical Systems, Vibrations:** Numerical modelling and small-scale experiments of cable vibration (due to sudden or propagating load shedding; induced by wind; due to shock load). Numerical stability analysis of retarded differential equations; application for a model of the human respiratory control system. Dynamics of controlled piecewise linear and nonlinear systems considering sampling and processing delays; application for a model of human balancing.
- **Fluid Mechanics, Thermal Sciences:** Reconstruction of velocity profiles using electromagnetic flow measurement. Inverse design of aerofoils (wind turbine blades, aircraft wings) considering extreme weather conditions. Modelling two-phase flows considering collision, evaporation and turbulent dispersion of particles. Simulation of icing processes numerically and in wind tunnel.

## **TEACHING ACTIVITY**

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### **Lecturer**

- Course (BSc): Dynamics, Vibrations, Fundamentals of Finite Element Method, Heat Transfer, Thermofluids, Aerodynamics, Fluid Dynamics
- Course (MSc/PhD): Vehicle Aerodynamics and Air Management, Complements in Heat Transfer, Continuum Mechanics, Mechanical Vibrations
- Special subject (MSc/PhD): Advanced Modeling, Ice – Material Interface, Atmospheric Icing of Structures

### **Teaching Assistant**

- Course (BSc), practical: Dynamics, Vibrations, Fundamentals of Finite Element Method, Statics, Strength of Materials, Heat Transfer, Thermofluids, Aerodynamics, Differential Equations
- Course (MSc), practical: Mechanical Vibrations
- Course (BSc), teacher assistant: Algebra, Calculus, Kinematics and Dynamics, Strength of Materials, Vibrations

### **Supervisor / reviewer**

- Director / co-director (present): 1 PhD student (director), 3 PhD students (co-director)
- Director / co-director (degrees obtained): 2 PhD and 3 MSc students
- Supervisor of final projects: completed 21 BSc students (Mechanical Engineer) and 2 BSc students (Industrial Manager), presently 4 BSc students (Mechanical Engineer)
- Scientific Students' Association conference projects: national 1 student (2<sup>nd</sup> prize), institutional 12 students (1<sup>st</sup> prize – 2, 2<sup>nd</sup> prize – 2, 3<sup>rd</sup> prize – 4)
- Thesis reviewer, 11 PhD and 3 MSc theses, 3 PhD theses (departmental version), 11 BSc final projects
- Doctoral exams: Dynamics, Fluid Mechanics, Heat Transfer, Strength of Materials, Thermodynamics of Atmospheric Ice

## **LANGUAGES**

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- English: writing, reading, speaking (fluent)
- French: writing, reading, speaking (fluent)
- Russian: writing, reading, speaking (basic)
- Hungarian: writing, reading, speaking (native)

## **SOFTWARES**

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- Programming language: Fortran
- Mathematics and simulations: Matlab, Mathematica, Maple
- Finite element software: Adina, Ansys
- CAD software: AutoCad (alapok)

## **ACTIVITIES IN SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS**

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### **Head of Institute**

- Savaria Institute of Technology, Eötvös Loránd University, 2020-

### **Program Director**

- Savaria Institute of Technology, Eötvös Loránd University  
BSc Mechanical Engineering, 2018-2020

### **Doctoral School**

- Doctoral School of Informatics, Eötvös Loránd University  
Supervisor (2023- )
- István Sályi Doctoral School of Mechanical Engineering Sciences, University of Miskolc  
Supervisor (2020- )
- Doctoral School of Environmental Sciences, Eötvös Loránd University  
Supervisor (2017- )
- Pál Kitaibel Doctoral School of Environmental Science, University of West Hungary  
Academic staff member (2016), supervisor (2015-2017)

### **Committees**

- Faculty of Informatics, Eötvös Loránd University, Teaching Committee, member 2017-2020
- Faculty of Informatics, Eötvös Loránd University, Learning Committee, member 2017-2020
- Habilitation reviewer: 1 candidate (University of West Hungary, 2016)

### **Professional Institutions**

- Scientific Association for Mechanical Engineering, Szombathely Department, member 2021-
- Hungarian Academy of Sciences, VI. Section of Engineering Sciences, Committee on Theoretical and Applied Mechanics, Member of Scientific Committee, 2021-
- Hungarian Academy of Sciences, VI. Section of Engineering Sciences, Committee on Theoretical and Applied Mechanics, Member of public body, 2015-
- Order of Quebec Engineers, Junior member, 2009-2012

### **Journals – review work**

- AIAA Journal of Thermophysics and Heat Transfer
- CFD Letters
- Cold Regions Science and Technology
- Electrical Engineering
- Energies
- Energy Engineering
- Engineering Failure Analysis
- Engineering Review
- Engineering Structures
- European Transactions on Electrical Power
- Gép (Machine) – Hungarian with English title and abstract
- IEEE Sensors Journal
- IEEE Transactions on Power Delivery
- IET Generation, Transmission & Distribution
- IET Science, Measurement & Technology
- International Journal of Heat and Fluid Flow
- International Journal of Multiphase Flow
- International Journal of Pressure Vessels and Piping
- Journal of Aerospace Engineering
- Journal of Flow Measurement and Instrumentation
- Journal of Mechanical Science and Technology
- Journal of Vibration and Control

- Journal of Wind Engineering and Industrial Aerodynamics
- Mathematics and Computers in Simulation
- Mathematical Problems in Engineering
- Mechanics & Industry
- Mesterséges Intelligencia (Artificial Intelligence) - Hungarian with English title and abstract
- Pollack Periodica
- Shock and Vibration
- The European Physical Journal Plus
- The Open Civil Engineering Journal
- The Open Electrical & Electronic Engineering Journal

### Conferences

- Section chairman, XIVth Hungarian Conference on Mechanics, Miskolc, Hungary, 2023 (Section: Dynamics V.)
- Session moderator, 19<sup>th</sup> International Workshop on Atmospheric Icing of Structures, Montreal, QC, Canada, 2022 (Session 9: De-icing Techniques)
- Member of Advisory Committee and Keynote Speaker, International Conference on Robotics, Control and Computer Vision, National Institute of Technology, Uttarakhand, India in association with ELTE Eötvös Loránd University, Budapest, Hungary, 2022.
- Review work, 14<sup>th</sup> Conference on Sustainable Development of Energy, Water and Environment Systems, Dubrovnik, Croatia, 2019
- Review work, 3<sup>rd</sup> South East European Conference on Sustainable Development of Energy, Water and Environment Systems, Novi Sad, Serbia, 2018 (2 papers)
- Review work, 1<sup>st</sup> Latin American Conference on Sustainable Development of Energy, Water and Environment Systems, Rio de Janeiro, Brazil, 2018 (1 paper)
- Review work, 6<sup>th</sup> International and 43<sup>rd</sup> National Conference on Fluid Mechanics and Fluid Power, Allahabad, India, 2016 (3 papers)
- Review work, 8<sup>th</sup> International Symposium on Cable Dynamics, Paris, France, 2009
- Review work, ASME Design Engineering Technical Conferences, Las Vegas, NV, USA, 2007
- Member of Reviewing Committee, 11<sup>th</sup> International Workshop on Atmospheric Icing of Structures, Montreal, QC, Canada, 2005 (reviewer of 3 papers)
- Section co-chairman, 11<sup>th</sup> World Congress in Mechanism and Machine Science, Tianjin, China, 2004 (Section: Nonlinear Oscillations 2)
- Review work, ASME Design Engineering Technical Conferences, Pittsburgh, PA, USA, 2001 (2 papers)

### Scientific activities for students

- Organization of scientific competitions for students (annually or biannually between 2008 and 2012) University of Quebec at Chicoutimi
- Judge for Scientific Conference of Students Canada-Wide Science Fair, Saguenay, QC, Canada, 2006

## GRANTS, AWARDS, PRIZES

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### Research grants

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| <b>2022</b>        | Principal investigator (extended till 2023)<br>Subject: Vibration control of transmission lines (participation in international scientific conference)<br>Source: <i>Mecenatúra (Mec_R_21) project no. 141334</i> from the National Research, Development and Innovation Fund   |
| <b>2022 – 2025</b> | Pillar leader (Pillar 3)<br>Title of project: Protection of high integrity national services and industrial infrastructures using cybersecurity, technological and legislative instruments (principal investigator: Tamás Kozsik)<br>Pillar 3: Security and data protection in the fields of material technology, industry 4.0 and energy engineering |

Source: *Project no. TKP2021-NVA-29* with the support provided by the Ministry of Innovation and Technology of Hungary from the National Research, Development and Innovation Fund

- 2017 – 2020** Workgroup coordinator (Workgroup 5), extended till 2021  
Title of project: EFOP-3.6.1-16-2016-00018 – Improving the role of research + development + innovation in the higher education through institutional developments assisting intelligent specialization in Sopron and Szombathely (principal investigator: Tibor Polgár)  
Workgroup 5: Innovative processing technologies, applications in energy engineering, and wide-range microstructure investigation techniques (workgroup leader: Jurij Sidor)  
Source: *EFOP-3.6.1-16 within Széchenyi 2020 program*
- 2007 – 2009** Principal investigator  
Title of project: Ice and snow shedding from conductors  
Source: *Institutional Research Support Program, University of Quebec at Chicoutimi*
- 2006 – 2007** Principal investigator  
Title of project: Ice shedding from bundled conductors  
Source: *Institutional Research Support Program, University of Quebec at Chicoutimi*

#### **Awards, prizes**

- 2018 – 2019** **Bolyai** + Higher Education Research Scholarship (within New National Excellence Program)
- 2016 – 2019** János **Bolyai** Research Scholarship
- 2002** **Rubik** Foundation (scholarship for foreign study)
- 1999 – 2000** **Gruber-Fúzy** study scholarship (2 semesters)
- 1997** 2<sup>nd</sup> prize  
**Scientific Conference of Students**  
Faculty of Mechanical Engineering, Budapest University of Technology and Economics  
Title: *Computation and Measurement of One Dimensional Gas Oscillations (in Hungarian)*
- 1997** **Scientific Society of Mechanical Engineering** award for M.Sc. thesis
- 1997** **Faculty of Mechanical Engineering** study scholarship  
Budapest University of Technology and Economics
- 1997** 2<sup>nd</sup> prize  
**National Scientific Conference of Students**, Engineering Sciences section  
Title: *Dynamics of Balancing (in Hungarian)*
- 1996 – 1997** **Hungarian Republic** distinguished scholarship (2 semesters)
- 1996** 1<sup>st</sup> prize  
**Scientific Conference of Students**  
Faculty of Mechanical Engineering, Budapest University of Technology and Economics  
Title: *Dynamics of Balancing (in Hungarian)*