

PERSONAL INFORMATION

Cătălin ALEXANDRU



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POSITION  
IOSUD UTBV

PhD Coordinator  
Doctoral studies field: Mechanical Engineering  
Since: 2009

EXPERTISE FIELD AND  
RESEARCH INTEREST AREAS

Design and testing of mechanical & mechatronic systems (ex. tracking systems for solar panels, robotic systems, motor vehicles - suspension, steering, and others);  
virtual prototyping (modelling - simulation - optimization)

WORK EXPERIENCE

- April 2016 onwards **Director of the University Doctoral Council (CSUD - UTBv)**  
Transilvania University of Braşov, 29 Bd. Eroilor, 500036 Braşov, Romania
- February 1992 onwards **Assistant (1992), Lecturer (1998), Associate professor (2001), Professor (2004)**  
Transilvania University of Braşov, 29 Bd. Eroilor, 500036 Braşov, Romania  
  - Teaching and research activities in mechanical & industrial engineering

EDUCATION AND TRAINING

- 2002 **Post-graduate certificate**  
Transilvania University of Braşov, 29 Bd. Eroilor, 500036 Braşov, Romania  
  - Informatics applied in engineering
- 1994-1998 **PhD diploma in Mechanical Engineering**  
Transilvania University of Braşov, 29 Bd. Eroilor, 500036 Braşov, Romania  
  - Kinematic and dynamic optimization of the guiding mechanisms used for the rear axles of the motor vehicles
- 1986-1991 **Bachelor of Science in Mechanical Engineering**  
Transilvania University of Braşov, 29 Bd. Eroilor, 500036 Braşov, Romania  
  - Motor vehicles

PERSONAL SKILLS

Mother tongue(s) Romanian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	C1	B2	B2	C1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user  
Common European Framework of Reference for Languages

Organisational / managerial skills

- Director of the University Doctoral Council, Transilvania University of Braşov (2016 - )
- Member in the CNATDCU commission of *Mechanical Engineering, Mechatronics and Robotics* (2016 - 2020)
- Member in academic councils: Administration Council of the Transilvania University of Braşov (2016 - ); University Senate (2020 - ); Faculty of Technological Engineering (2004 - 2010); Faculty of Product Design and Environment (2010 - 2012, 2016 - ); Department of Product Design, Mechatronics and Environment (2016 - )
- Project manager, administrative manager and financial manager for national research projects
- Member in the national board of the Romanian Association for the Mechanisms and Machines Science - ARoTMM (2005 - 2013)
- Member in the scientific council of the technological & business incubator Products and Technologies for Sustainable Energy - ITA Pro-Energ (2005 - 2016)

ADDITIONAL INFORMATION

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Scientific activity

- Books/monographs: 11
- Chapters in books: 10
- Book editor: 2
- Articles in Web of Science journals: 19
- Articles in Web of Science proceedings: 33
- Articles in BDI journals & proceedings: over 200
- Patents / patent proposals: 4 / 3
- Reviewer for Web of Science journals: 45 journals
- Guest editor & Topic Editor for *Energies* (ISSN 1996-1073)

Projects

- Research projects obtained by national competition (project manager / administrative manager / financial manager): 7 (5 / 1 / 1)
- Team member in national / international projects & contracts: 23 (20 / 3)

Memberships

- Romanian Association for the Mechanisms and Machines Science (ARoTMM)
- International University Association for Science and Technology of Romania (UASTRO)
- International Federation for the Promotion of Mechanism and Machine Science (IFTToMM)
- European Association for the Development of the Renewable Energy and Power Quality (EA4EPQ)

Citations

- Citations in Web of Science journals & proceedings: over 250
- Citations in BDI journals & proceedings (SCOPUS, SpringerLink, EBSCO, IEEE Xplore, Wiley, ProQuest, and others): over 400

Hirsch factor

- Web of Science – 10 (<http://www.researcherid.com/rid/A-9895-2012>)
- SCOPUS – 14 (<http://www.scopus.com/authid/detail.uri?authorId=24801921400>)
- Scholar – 21 (<https://scholar.google.ro/citations?user=9yh75rQAAAAJ&hl=en>)

## ANNEX

**Books (selection)**

1. Alexandru, C. Simulation of the mechanical systems. Lux Libris, 2000, ISBN 973-9428-25-8.
2. Alexandru, C. Linkage mechanisms. Kinematic analysis, synthesis & simulation. Transilvania University Press, 2000, ISBN 973-9474-83-7.
3. Alexandru, C., Pozna, C. Dynamics of mechanical systems using virtual prototyping tools. Transilvania University Press, 2003, ISBN 973-635-225-0.
4. Alexandru, C. Modeling and simulation in engineering (Editor). IntechOpen, 2012, ISBN 978-953-51-0012-6, DOI 10.5772/1415.

**Articles in Web of Science journals (selection)**

1. Alexandru, C., Pozna, C. Simulation of a dual-axis solar tracker for improving the performance of a photovoltaic panel. Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy, vol. 224, nr. 6/2010, p. 797-811, ISSN 0957-6509, DOI 10.1243/09576509JPE871.
2. Alexandru, C., Tatu, I.N. Optimal design of the solar tracker used for a photovoltaic string. Journal of Renewable and Sustainable Energy, vol. 5, nr. 2, 2013, p. 023133, ISSN 1941-7012, DOI 10.1063/1.4801452.
3. Alexandru, C. A novel open-loop tracking strategy for photovoltaic systems. The Scientific World Journal, vol. 2013, p. 205396(1-12), ISSN 1537-744X, DOI 10.1155/2013/205396.
4. Alexandru, C. A mechanical integral steering system for increasing the stability and handling of motor vehicles. Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, vol. 231, nr. 8, 2017, p. 1465-1480, ISSN 0954-4062, DOI 10.1177/0954406215624465.
5. Alexandru, C. Method for the quasi-static analysis of beam axle suspension systems used for road vehicles. Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering, vol. 233, nr. 7, 2019, p. 1818-1833, ISSN 0954-4070, DOI 10.1177/0954407018790159.
6. Alexandru, C. Optimal design of the dual-axis tracking system used for a PV string platform. Journal of Renewable and Sustainable Energy, vol. 11, nr. 4, 2019, p. 043501(1-14), ISSN 1941-7012, DOI 10.1063/1.5109390.
7. Alexandru, P., Macaveiu, D., Alexandru, C. A gear with translational wheel for a variable transmission ratio and applications to steering box. Mechanism and Machine Theory, vol. 52, 2012, p. 267-276, ISSN 0094-114X, DOI 10.1016/j.mechmachtheory.2012.02.005.
8. Alexandru, P., Vișa, I., Alexandru, C. Modeling the angular capability of the ball joints in a complex mechanism with two degrees of mobility. Applied Mathematical Modelling, vol. 38, nr. 23, 2014, p. 5456-5470, ISSN 0307-904X, DOI 10.1016/j.apm.2014.04.032.
9. Enescu, M., Alexandru, C. Optimal algorithm for spray pyrolysis deposition of TiO<sub>2</sub> films by using an industrial robot. Journal of Renewable and Sustainable Energy, vol. 4, nr. 5, 2012, p. 053126 (1-11), ISSN 1941-7012, DOI 10.1063/1.4763565.
10. Ioniță, M., Alexandru, C. Dynamic optimization of the tracking system for a pseudo-azimuthal photovoltaic platform. Journal of Renewable and Sustainable Energy, vol. 4, nr. 5, 2012, p. 053117(1-15), ISSN 1941-7012, DOI 10.1063/1.4757630.

**Research projects / contracts (selection)**

1. Virtual prototyping of the mechanical systems, with applicability to the guiding & suspension systems of the motor vehicles. CNCSIS research grant, code 311/2002 & 150/2003 (project manager).
2. Researching, designing and testing the windshield wiper mechanisms using modern techniques. CNCSIS research grant, code 1321/2004-2006 (project manager).
3. Research regarding the analysis and optimization in virtual environment, on digital prototyping platforms, of the mechatronic systems used for improving the solar radiation conversion in electricity. CNCSIS research grant, code 892/2007-2008 (project manager).
4. Product design for sustainable development. CNCSIS research platform, code 79/2006-2007 (administrative manager).
5. Modeling and simulation of the behavior of an electrical voltage reduction system. Beneficiary AUTOLIV Romania, 2016-2017, contract nr. 16244/2016 (project manager).

**Patents**

1. Alexandru, C., Macaveiu, M.D., Alexandru, P. Steering gear box with mono-contour articulated mechanisms with double drive. Patent nr. 127279, 2016.
2. Macaveiu, M.D., Alexandru, P., Buta, A.C., Alexandru, C. Double-profiled cam mounted in rear axle steering box of motor vehicle with four steering wheels in conditions of integral steering system. Patent nr. 127183, 2016.
3. Tatu, N.I., Alexandru, C. Tracking mechanism for string of photovoltaic modules. Patent nr. 128543, 2019.
4. Țoțu, V., Alexandru, C. Suspension mechanism for light vehicles and single-seaters. Brevet nr. 130228, 2022.