



Technical University of Cluj-Napoca
Faculty of Automotive, Mechatronics and Mechanical Engineering
Department of Mechatronics and Machine Dynamics
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List of scientific papers

A. List of relevant works included in electronic format:

1. **Rusu, C.**, Tatar, M.O - *Adapting Mechanisms for In-pipe Inspection Robots: A review*, Applied Sciences, 12, 2022, ISSN 2076-3417 [**IF 2.838**]
2. S. Noveanu, I.A Ivan, D.C. Noveanu, **C. Rusu**, D. Lates - *SiMFlex Micromanipulation Cell with Modular Structure*, Applied Sciences 10, 2020, ISSN 2076-3417 [**IF 2.679**]
3. **C. Rusu**, S Besoiu, MO Tatar - *Design and closed-loop control of a piezoelectric actuator*, IOP Conference Series: Materials Science and Engineering, vol 1018, 2021, doi.org/10.1088/1757-899X/1018/1/012002.
4. **Rusu, C.**, Besoiu, S. - *Analysis of the displacement amplification ratio for a piezoelectric driven compliant mechanism*, Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering, Vol 64, nr I, pag 87-92, 2021, ISSN 1221-5872
5. S. Noveanu, **C. Rusu**, C. Rancea, D. Lateş - *Research Concerning the End-effectors for SiMFlex Microgripper*, IOP Conference Series: Materials Science and Engineering, Vol 724, nr 1, 2020, doi:10.1088/1757-899X/724/1/012055
6. S. Noveanu, D.Lates, L.Fusariu, **C. Rusu** - *A New Compliant Microgripper and Study for Flexure Hinges Shapes*, Proceedings of the 13th International Conference INTER-ENG 2019 in Procedia Manufacturing, vol 46, 2019, ISSN 2351-9789
7. **C. Rusu**, S, Besoiu, K Vidrean, C Lapusan - *New approaches in online evaluation of photovoltaic systems efficiency by implementing IoT monitoring solutions*, Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering, Vol 62 nr IV, pag12-18, 2019, ISSN 1221-5872
8. **C. Rusu**, T.L. Tiuca, S. Noveanu, D. Mândru - *A KBE tool for solving the mechanisms kinematics*, The 7th International Conference on Advanced Concepts on Mechanical Engineering ACME2016, IOP Conference Series: Materials Science and Engineering, Vol 147, pp 652-656, ISSN 1757-8981
9. Maties, V., Bălan, R., **Rusu, C.**, Hancu, O., Lapusan, C., Besoiu, S. - *Portable laboratory for mechatronic education*, RO123627-B1, Derwent Primary Accession Number: 2015-10392L, 2015



B. Doctoral thesis:

„Contributions regarding the study of mechanisms for mechatronics” scientific supervisor: Prof.dr.ing. Vistrian Mătieș, Technical University of Cluj-Napoca, Public presentation: October 2005

C. Patents:

Maties, V., Bălan, R., **Rusu, C.**, Hancu, O., Lapusan, C., Besoiu, S. - *Portable laboratory for mechatronic education*, RO123627-B1, Derwent Primary Accession Number: 2015-10392L, 2015

D. Books and chapters in books:

Books:

1. Rusu C. - *Mecanisme*, Editura UTPress, Cluj Napoca, 2021, ISBN 978-606-737-501-5
2. Rusu C. - *Mecanisme II. Suport de curs*, Editura UTPress, Cluj Napoca, 2022, ISBN 978-606-737-578-7
3. Csibi, V., Popa, M., Mândru, D., Teușan, E., Preja, D., Stan, S., **Rusu, C.**, Barbu, D., *Mașini, Instalații și Tehnologii în Mecanica Fină și Mecatronică – Aplicații*, Editura Alma Mater, Cluj– Napoca, 2003 ISBN 973-8397-35-9.
4. Mătieș, V., Miroiu, S.C., Mândru, D., Bălan, R., Tătar, M.O., **Rusu, C.**- *Tehnologie și educație mecatronică. Auxiliar curricular*, Editura Economică, București, 2002, ISBN 973-8318-16-5.
5. Mătieș, V., Mândru, D., Bălan, R., Tătar, M.O., **Rusu, C.**- *Tehnologie și educație mecatronică*, Editura Todesco, Cluj-Napoca, 2001, ISBN 973-8198-05-4.

Chapters in books:

1. Mătieș V., **Rusu C.**, Tămaș, V., 2020 – *National Mechatronic Platform – The Foundation of a Smart and Sustainable Society Development*, în: Ion Visa, Anca Duta (eds), *Solar Energy Conversion in Communities*, Springer International Publishing, ISBN 978-3-030-55756-0.
2. Mătieș V., **Rusu C.**, Noveanu, S., 2016 – *Mecatronică Tehnologie secolului XXI*, în volumul: Platforma națională de mecatronică, Coordonator: Prof.dr.ing. Maties Vistrian, Editura UTPress, Cluj Napoca ISBN 978-606-737-148-2.
3. Mătieș V., **Rusu C.**, 2009 – *Tehnologie și educație mecatronică*, în volumul: Platforme mecatronice pentru educație și cercetare, Coordonator: Prof.dr.ing. Maties Vistrian, Editura Todesco, Cluj-Napoca, ISSN 978-97-7695-79-6.

E. Articles published in international scientific journals:

1. **Rusu C.**, Tatar M.O - *Adapting Mechanisms for In-pipe Inspection Robots: A review*, Applied Sciences, 12, 2022, ISSN 2076-3417 [IF **2.838**]



2. **Rusu C**, Besoiu S, - *Analysis of the displacement amplification ratio for a piezoelectric driven compliant mechanism*, Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering, Vol 64, nr I, pp 87-92, 2021, ISSN 1221-5872
3. Lapusan C, **Rusu C**, Noveanu S - *Development of a nonlinear model for a high precision piezoelectric positioning system with applications in model-based design*, Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering, Vol 64, nr I, pp 35-38, 2021, ISSN 1221-5872.
4. S. Noveanu, I.A. Ivan, D.C. Noveanu, **C. Rusu**, D. Lates - *SiMFlex Micromanipulation Cell with Modular Structure*, Applied Sciences 10, 2020, ISSN 2076-3417 [**IF 2.679**]
5. **Rusu C**, Tatar MO, - *Design of an inspection robot based on the pantograph mechanism*, Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering, Vol 63, nr III, pp 265-268, 2020, ISSN 1221-5872
6. **C. Rusu**, S, Besoiu, K Vidrean, C Lapusan - *New approaches in online evaluation of photovoltaic systems efficiency by implementing IoT monitoring solutions*, Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering, Vol 62 nr IV, pp12-18, 2019, ISSN 1221-5872
7. S. Noveanu, C. Lăpușan, **C. Rusu**, C. Rad - *Flexmentoring cooperation model proposed in HEIBUS project*, Review of Management & Economic Engineering. 2019, Vol. 18 Nr 4, p643-649, ISSN: 1583-624X
8. Tiuca, T., **Rusu C.**, Noveanu, S., Besoiu, S., Mandru, D - *The Simulation and the interface of the mechanisms used in Microfactories*, Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering, Vol 59, pp 609-612, 2015, ISSN 1221-5872
9. Tiuca, T., **Rusu, C.**, Noveanu, S., Mândru, D. - *Study of a General KBE Model for Mechanical Systems Analysis*, Scientific Bulletin Series C: Fascicle Mechanics, Tribology, Machine Manufacturing Technology, Vol. 2015 Issue 29, pp 86-89. ISSN 1224-3264
10. Draghici M., **Rusu, C.**, Plesa A, Besoiu, S - *Modelling and control of a gantry crane system*, Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering, 2013, Vol57, pp, 537-540, ISSN 1221-5872.
11. Brisan, C., **Rusu, C.** – *Aspects concerning modeling of self-reconfigurable parallel robots*, Mechanika Vol.69 nr.1, pp 59-62, 2008, ISSN: 1392-1207.

F. Publications in extenso, appearing in the proceedings of the main international specialized conferences:

1. D G Buleandra, **C Rusu**, A O Baneasa , R C Donca - *Kinematics and design of a 12-DOF quadrupedal robot* In: Doroftei, I., Nitulescu, M., Pislă, D., Lovasz, EC. (eds) Proceedings of SYROM 2022 & ROBOTICS 2022. IISSMM 2022. Mechanisms and Machine Science, vol 127. Springer, Cham. https://doi.org/10.1007/978-3-031-25655-4_36



2. Pecie, R, Tatar, M.O, **Rusu, C** - *Studies on Mobile Robots for all Types of Terrain*, Proceedings of 10th International Conference on Manufacturing Science and Education, June 2 - 4, 2021, Sibiu, Romania, <https://doi.org/10.1051/mateconf/202134308015>.
3. Gyarmati M, Tatar MO, **Rusu C** - *Design and Development of a Search and Rescue Robot with TriSTAR locomotion units*, Proceedings of the International Conference MTM&Robotics 2020 In: Lovasz, EC., Maniu, I., Doroftei, I., Ivanescu, M., Gruescu, CM. (eds) *New Advances in Mechanisms, Mechanical Transmissions and Robotics. Mechanisms and Machine Science*, Springer, Cham., ISSN 2211-0984, https://doi.org/10.1007/978-3-030-60076-1_16.
4. **C. Rusu**, S. Besoiu, M.O. Tatar - *Design and closed-loop control of a piezoelectric actuator*, Proceedings of the 11th International Conference on Advanced Manufacturing Technologies, ICAMaT 2020, Bucharest, October 29- 30, 2020, In: IOP Conference Series: Materials Science and Engineering, ISSN 1757-8981 <https://doi.org/10.1088/1757-899X/1018/1/012002>.
5. S. Noveanu, **C. Rusu**, C. Rancea, D. Lateş - *Research Concerning the End-effectors for SiMFlex Microgripper*, Proceedings of International Conference on Tribology (ROTRIB'19) 19–21 September 2019, Cluj-Napoca, Romania, In: IOP Conference Series: Materials Science and Engineering, ISSN: 1757-8981, doi:10.1088/1757-899X/724/1/012055
6. S. Noveanu, D.Lates, L.Fusariu, **C. Rusu** - *A New Compliant Microgripper and Study for Flexure Hinges Shapes*, Proceedings of the 13th International Conference INTER-ENG 2019 in Procedia Manufacturing, vol 46, 2019, ISSN 2351-9789
7. **C. Rusu**, T.L. Tiuca, S. Noveanu, D. Mândru - *A KBE tool for solving the mechanisms kinematics*, The 7th International Conference on Advanced Concepts on Mechanical Engineering ACME2016, IOP Conference Series: Materials Science and Engineering, Vol 147, pp 652-656, ISSN 1757-8981
8. T.L. Tiuca, **C. Rusu**, S. Noveanu, D. Mândru - *General KBE model with inheritance and multi-CAD support*, The 7th International Conference on Advanced Concepts on Mechanical Engineering ACME2016, IOP Conference Series: Materials Science and Engineering, Vol 147, pp 536-543, ISSN 1757-8981
10. Lapusan C., **Rusu C.**, Brai, L., Mandru, D - *Development of a multifunctional robotic arm for in-pipe robots*, Proceeding of the 7th IEEE International Conference: Electronics, Computers and Artificial Intelligence (ECAI), 2015, ISSN: 2378-7147
11. Noveanu, S., **Rusu, C.**, Mândru, D. - *Design and Simulation the Manipulator SI2M Used in Microfactories*, Proceedings of the 6th International Conference on Robotics 2014, in *Applied Mechanics and Materials*, vol.762, pp. 27-32, 2015 doi.org/10.4028/www.scientific.net/amm.762.27
12. Draghici M., **Rusu C.**, Plesa A., Balan R., Besoiu S - *Control Method Comparison for Pneumatic Artificial Muscle Actuators*, The 11th IFToMM International Symposium on Science of Mechanisms and Machines. *Mechanisms and Machine Science*, Springer, Vol18, pp 351-359, 2014, doi.org/10.1007/978-3-319-01845-4_35



13. M.P. Draghici, **C. Rusu**, S. Besoiu, R. Balan - *Model predictive control for pneumatic artificial muscles*, XVI International Scientific Conference on Industrial Systems, CSI, 2014, Vol14, pp. 91-95, ISBN 978-86-7892-652-5
14. Cosma, I.A., Maties, V., **Rusu, C.** - *Control Design an Simulations of the Linear Actuator LX-80-L*, Proceedings of the 10th IFToMM International Symposium on Science of Mechanisms and Machines, Brasov, Romania, October 12-15, pp 503-509, 2009, Springer, <https://doi.org/10.1007/978-90-481-3522-6>
15. VasIU, R., **Rusu, C.**, Csiszar, A., Brisan,C., Verl A., - *Conceptul design of a reconfigurable parallel robot*, 2013 IEEE/ASME International Conference on Advanced Intelligent Mechatronics, Wollongong, Australia, Vol 1., pp. 1193 -1198, ISBN 978-1-4673-5319-9, DOI 10.1109/AIM.2013.6584256.
16. Rad, C., **Rusu, C.**, Balan, R. – *Kinematics Investigation, Workspace Analysis and Actuators Design for a 2-DOF Redundant Parallel Robot*, Proceedings of the 5th International Conference on Robotics and Automation Systems, in Solid State Phenomena, Vols. 166-167, pp 333-338, ISSN: 1012-0394, doi.org/10.4028/www.scientific.net/SSP.166-167
17. Stan, S.-D., Maties, V., Balan, R., **Rusu, C.**, Besoiu, S. - *Optimal link design of a six degree of freedom micro parallel robot based on workspace analysis*, Proceedings of the 10th IEEE International Workshop on Advanced Motion Control, AMC'08,Trento, Italy, pp 637-642, 2008, ISSN 1943-6580 , [doi:10.1109/AMC.2008.4516141](https://doi.org/10.1109/AMC.2008.4516141)
18. Stan, S.-D., Maties, V., Balan, R., **Rusu, C.** - *Optimization of a Six Degree of Freedom Micro Parallel Robot*, Proceedings of the IEEE International Conference on Industrial Technology, Chengdu, China, pp 247-251, 2008, [doi:10.1109/ICIT.2008.4608357](https://doi.org/10.1109/ICIT.2008.4608357)
19. Mandru, D., **Rusu, C.**, Teușan, E., - *Robotic systems for rehabilitation*, The 11th International Research/Expert Conference "Trends in the Development of Machinery and Associated Technology" TMT 2007, Hammamet, Tunisia, 05-09 September, pp, 1495-1498, 2007, ISBN 978-9958-617-34-8
20. Mandru, D., **Rusu, C.**, Teușan, E., Lungu, I., - *Development of Robotic Systems for Upper and Lower Limbs Kinetotherapy*, The 1st International Conference on Advancements of Medicine and Health Care Through Technoloy, MEDITECH 2007 , 27-29 September, Cluj-Napoca, pp.13-18, 2007, ISSN 1841-3323
21. **Rusu, C.**, Maties, V., Teușan, E., - *Design for control approach in the study of planar mechanisms*, Proceedings of the 8th International Conference on Mechatronics and Precision Engineering Cluj-Napoca, in Acta Technica Napocensis, Series Applied Mathematics and Mechanics: No 49, vol II, 2006, pp. 409-413, ISSN 1221-5872.
22. **C. Rusu**, D. Mândru, V. Măties, - *Upper limb exerciser*, Proceedings of the 5th European Symposium on BioMedical Engineering, ESMBE'2006, Patras, Greece, July 7-9, 2006
23. **Rusu, C.**, Mandru, D., Mătieș, V. – *A two degree of freedom robotic exerciser for rehabilitation*, Proceedings of the 9th IFToMM International Symposium on Theory of Machines and Mechanisms, Section 1 Planar Mechanisms, September 1 - 4, 2005 Bucharest, Romania.



24. **Rusu, C.**, Mătieș, V., Besoiu, S. – *Considerations Regarding the Control Mechanisms in Mechatronics*, Proceedings of the 9th IFToMM International Symposium on Theory of Machines and Mechanisms, Section 1 Planar Mechanisms, Bucharest, Romania, 2005, pp 167-170.
25. Brisan, C., Bara, M., **Rusu, C.**, Stan, S. - *Aspects of modelling of anthropomorphic mechanisms*, Proceedings of 12th International Workshop on Robotics in Alpe-Adria-Danube Region RAAD'2003, Cassino, Italy, paper no.21

G. Other Scientific Papers and Contributions

1. Tiuca T., **Rusu C.**, Noveanu S., Besoiu S., Csibi V., - *The Design and Optimization of a Compliant Gripper used KBE Tools*, Proceedings of the 23th International Conference in Mechanical Engineering, OGET, 2015, ISSN 2068-1267
2. Ioan Adrian Cosma, Vistrian Maties, **Călin Rusu**, Rares Ciprian Mindru - *Mechatronic Platforms for Studying Driving Systems Based on Lorentz Actuators*, The 3rd International Conference on Computational Mechanics and Virtual Engineering COMEC 2009, 29 – 30 October 2009, Brasov, Romania, pag 178-181.
3. Sorin Besoiu, Vistrian Mătieș, **Călin Rusu** - *Considerații privind schemele structurale ale sistemelor mecatronice de acționare cu mușchi artificiali*, Conferința Națională de Educație Tehnologică și Tehnologii Educaționale CNETTE 2009, Cluj-Napoca, pag 413-418, ISSN 2066-446X
4. S. Besoiu, V. Maties, **C. Rusu** - *Considerations Regarding Actuators Based on Artificial Muscles*, Proceedings on the 2nd International Conference “Advanced Composite Materials Engineering” - COMAT 2008, Brasov, Romania, Vol 1, pag 409-414, ISSN 1844-9336.
5. S. Besoiu, V. Mătieș, **C. Rusu**, F. Popa - *Design Elements of Grippers with Actuators Based on Pneumatic Artificial Muscles*, Proceedings of the 4th International Conference on Robotics - ROBOTICA '08
6. **Rusu, C.**, Brisan, C – *Consideration concerning training of the human muscles using robotic methods*, The Annual Symposium of the Institute of Solid Mechanics, SISOM 2006, Bucharest, Romania
7. **Călin Rusu**, Dan Mândru, Vistrian Mătieș – *A two degree of Freedom Robotic exerciser for Rehabilitation*, Mechanisms and Manipulators Journal, vol 5, Bucuresti Romania, 2006, ISSN 1583-4743
8. **Călin Rusu**, Dan Mandru, Sorin Besoiu - *A Two DOF Robotic Exerciser Mecatronica*, 2006 Vol 2, pag. 56-59, ISSN 1583-7653.
9. Besoiu, Sorin; Maties, Vistrian; **Rusu, Calin**; Donca, Radu - *The Integrated Design and Optimization of a Kinematic Axis in Mechatronics*, Mecatronica. 2006, Vol. 2, pag.14-17, ISSN 1583-7653



10. Dan Mândru, **Călin Rusu**, Olimpiu Tătar - *Device for upper limb kinethotherapy*, Annals of the Oradea University. Fascicle of Management and Technological Engineering, Vol. 14, pag 392-395, 2005, ISSN 1583-0691.
11. Mândru, D., **Rusu, C.**, Noveanu, S - *Cercetări privind dezvoltarea unui sistem robotizat pentru exerciții de reabilitare*, Proceedings of the 7-th International Conference on Mechatronics and Precision Engineering COMEFIM'7, București, 2004, pag. 95 – 96, ISBN 973-86886-1-2
12. V. Mătieș, **C. Rusu** – Considerations regarding the mechanisms for mechatronics, Proceedings of the 9th International Conference on Mechanisms and Mechanical Transmissions MTM2004, Cluj Napoca 2004, In Acta Technica Napocensis, Nr 47 Vol.1, pag.571-575, ISSN 1221-5872.
13. Teușan, E., **Rusu, C.**, Brișan, C., - *Contribuții la studiul dinamic al roboților antropomorfi*, Conferința Națională “Profesorul Dorin Pavel – fondatorul hidroenergeticii romanesti”, Sebeș, 2003.
14. **Rusu, C.**, Bara M. Ardelean, I. - *Contributii la studiul cinematicii mecanismelor pentalater*, Conferinta Stiintifica cu participare internationala, 8-9 Mai 2003, Baia Mare, Scientific Bulletin Series C (supliment) Vol XVII (2003) pp.249-252, ISSN 1224-3264.
15. **Rusu, C.**, Bara M. Ardelean, I., - *Aspecte privind sinteza geometrico-pozitionala a mecanismelor pentalater*, Conferinta Stiintifica cu participare internationala, 8-9 Mai 2003, Baia Mare, Scientific Bulletin Series C (supliment) Vol XVII (2003) pp.253-256, ISSN 1224-3264.
16. Tătar, M.O., **Rusu, C.**, Stan, S., - *Mini și microroboti de inspecție cu roți*, X. Orszagos Gepesz Talalkozo - OGET 2002, pag. 238- 240, ISSN 1454 – 0746.
17. Olimpiu Tătar, Dan Mândru, **Călin Rusu**, Rareș Crișan - *Minirobot mobil prin țevi*, Simpozionul național cu participare internațională PRASIC'02, 7-8 Noiembrie 2002, Brasov, Romania, Vol. I Mecanisme și Tribologie, Vol. I, pag. 216-220, ISBN 973 – 635 – 064 – 9.
18. Dan Mândru, Olimpiu Tătar, **Călin Rusu**, Rareș Crișan - *Contribuții privind proiectarea dispozitivelor de prindere miniaturizate (minigripere)*, Simpozionul național cu participare internațională PRASIC'02, 7-8 Noiembrie 2002, Brasov, Romania, Vol. I Mecanisme și Tribologie, pag 145-150, ISBN 973-635-064-9
19. Dan Barbu, **Călin Rusu**, Olimpiu Hancu - *Analiza structurală și cinematică a mecanismelor cu oscilații și curse reglabile*, Simpozionul național cu participare internațională PRASIC'02, 7-8 Noiembrie 2002, Brasov, Romania, Vol. I Mecanisme și Tribologie, ISBN 973-635-064-9.
20. Tătar, M.O., Mândru, D., Barbu, D., **Rusu, C.**, - *Studiu privind tehnologia microsistemelor*, IX. Orszagos Gepesz Talalkozo -OGET 2001, Cluj-Napoca, pag. 209-212, ISSN 1454 – 0746
21. Mândru, D., Tătar, M.O., **Rusu, C.**, - *Anthropomorphic Prehension Device*, The Eighth IFToMM International Symposium on Linkages and Computer Aided Design Methods



- Theory and Practice of Mechanisms SYROM 2001, București pag. 197-202, ISBN 973 – 8143 – 38 – 1
22. Ardelean, I., Maniu, A., **Rusu, C.**, Tătar, M.O., - *Măsurarea tridimensională a micro deplasărilor utilizată în studiul jocurilor din cuple*, The VI th International Conference on Precision Mechanisms and Mechatronics COMEFIM-6, Brașov, October 10-12, 2002, lucrare publicată în -The Romanian Review of Precision Mechanics, Optics and Mechatronics, Supplement 20a,2002, pag. 191-198, ISSN 1220 - 6830.
23. Măties, V, **Rusu C** – *The Mechanisms and the Mechatronic Technology*, Proceedings of the 8th International Conference on the Theory of Machines and Mechanisms, September 2000, Liberec, Cehia, ISBN 80-7083418-8.

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