PERSONAL INFORMATION

Name and surname	Momcilo Prodanovic
Date and place of birth	1987., Belgrade
Scientific title	Junior Research Assistant
E-mail	momcilo.prodanovic@gmail.com momcilo.prodanovic@kg.ac.rs
Educational-scientific / educational-artistic field	Technical and technological sciences
University, Faculty, Organizational unit	University of Kragujevac, Faculty of Engineering
Research field and areas	Electrical engineering and computer science, Biomedical engineering

EDUCATION

BACHELOR

Year	2011
Place	Belgrade, Serbia
Institution	University of Belgrade, School of Electrical Engineering

MASTER STUDIES

Year	2012
Place	Belgrade, Serbia
Institution	University of Belgrade, School of Electrical Engineering

MASTER STUDIES

Year	2018
Place	Melbourne, Australia
Institution	Monash University

DOCTORAL DISSERTATION

Year	
Place	
Institution	
Title of doctoral dissertation	
Scientific title	
Research area	

PROFESSIONAL BIOGRAPHY – ELECTION IN RESEARCH OR SCIENTIFIC TITLE

Date	Institution	Scientific title
02.07.2020.	University of Kragujevac, Faculty of Engineering	Junior Research Assistant

PROFESSIONAL BIOGRAPHY - TRAINING

Year	Institution	Duration
2011	Institute for Cardiovascular Diseases "Dedinje", Center for Invasive and Interventional Cardiovascular Diagnostics and Therapy, Belgrade, Serbia	2 weeks
2013	Illinois Institute of Technology, Chicago, IL, USA	4 months
2013-2014	Northeastern University, Boston, MA, USA	18 months
2014	Harvard University, Cambridge, MA, USA	5 months

ENGAGEMENT IN THE FORMATION OF SCIENTIFIC PERSONNEL

PARTICIPATION IN NATIONAL PROJECTS FINANCED BY MINISTRY OF EDUCATION/MINISTRY OF SCIENCE AND TECHNOLOGICAL DEVELOPMENT/SCIENCE FUND OF THE REPUBLIC OF SERBIA:

1. 2012: Junior researcher – project supported by Ministry of science and Techological development, Republic of Serbia (Contract No: 175016)

PARTICIPATION IN INTERNATIONAL PROJECTS

1. 2012: Junior researcher at "Project InRES" (IZ73Z0_128134) project, funded by Swiss National Foundation, Berne (SCOPES programme). Project coordiantors: Prof. Manfred Morari, ETHZ, Zurich, Switzerland, and Prof. Dejan Popovic, School of Electrical Engineering, University of Belgrade, Serbia.
2. 2013-2014: Research scholar at "BioCAT" (P41 GM103622) project funded by National Institutes of Health (NIH), USA. Project coordiantors: Prof. Thomas C. Irving, Illinois Institute of Technology, Chicago, IL, USA and Prof. Srboljub M. Mijailovich, Northeastearn University, Boston, MA, USA.
3. 2014-2018: Research scholar at Australian Research Council Centre of Excellence for Integrative Brain Function (ARC CIBF) project, funded by Australian Research Council. Project coordinator: Monash University, CI: Prof. Arthur Lowery, Monash University, Melbourne, VIC, Australia.
4. 2018-2022: Researcher at "SilicoFCM" (No 777204) project, funded by European Union's Horizon 2020 programme. Project coordinator: Prof. Nenad Filipovic, Bioengineering Research and Development Center – BioIRC DOO, Kragujevac, Serbia.
5. 2020-2022: Consultant at "Multiscale Modeling and X-ray Diffraction: A novel approach to understanding heart disease" (19IPLOI34770173) project, funded by American Heart Foundation. Project coordinator: Prof. Thomas C. Irving, Illinois Institute of Technology, Chicago, IL, USA.

MEMBERSHIP IN SCIENTIFIC AND PROFESSIONAL ASSOCIATIONS

1. Sarcomere Society Member - An international scientific association that gathers scientists from the field of muscle research, organized by Prof. Michael Regnier, University of Washington, Seattle, WA, USA

ORGANIZATION OF NATIONAL/INTERNATIONAL SCIENTIFIC MEETINGS (CONFERENCES, CONGRESSES...)

1. Member of team involved in organizing and preparing 9th Urban Drainage Modeling Conference in Belgrade, Serbia – in charge for IT support.

AWARDS AND RECOGNITIONS

1. Annual award of the Institute of Information Technologies, University of Kragujevac, for the researcher with the highest number of points achieved by publishing papers in the M10 and M20 categories in 2021 in the field of technical and technological sciences.

LIST OF SCIENTIFIC PAPERS:

Monographs, Monographic studies, Thematic anthologies	**Sum**
Papers published in scientific journals of international scientific importance	**Sum** 6

M21 Paper in a top international journal (in the top 30% within field):

1. Filipovic N., Sustersic T., Milosevic M., Milicevic B., Simic V., **Prodanovic M.**, Mijailovic S., Kojic M. (2022): "SILICOFCM platform, multiscale modeling of left ventricle from echocardiographic images and drug influence for cardiomyopathy disease", Computer Methods and Programs in Biomedicine, 227, 107194. DOI: 10.1016/j.cmpb.2022.107194

2. **Prodanovic M.**, Geeves M. A., Poggesi C., Regnier M., Mijailovich S.M. (2022): "Effect of Myosin Isoforms on Cardiac Muscle Twitch of Mice, Rats and Humans", International Journal of Molecular Sciences, 23(3), 1135. DOI: 10.3390/ijms23031135
3. Mijailovich S.M., **Prodanovic M.**, Poggesi C., Geeves M.A., Regnier M. (2021): "Multiscale Modeling of Twitch Contractions in Cardiac Trabeculae", Journal of General Physiology 153 (3) (2021) e202012604. DOI: 10.1085/jgp.202012604
4. Mijailovich S.M., **Prodanovic M.**, Irving T.C. (2019): "Estimation of Forces on Actin Filaments in Living Muscle from X-ray Diffraction Patterns and Mechanical Data", International journal of molecular sciences, 20(23), 6044.DOI: 10.3390/ijms20236044

M22 Paper in a prominent international journal (in the top 30-60% within field):

1. Mijailovich S.M., **Prodanovic M.**, Poggesi C., Powers J.D., Davis J., Geeves M.A., Regnier M. (2021): "The effect of variable troponin C mutation thin filament incorporation on cardiac muscle twitch contractions", Journal of Molecular and Cellular Cardiology, 155, 112-124. DOI: 10.1016/j.yjmcc.2021.02.009
2. **Prodanovic M.**, Irving T.C., Mijailovich S.M. (2016): "X-ray diffraction from nonuniformly stretched helical molecules". Journal of Applied Crystallography, 49(3), 784-797. DOI: 10.1107/S1600576716003757.

Proceedings of international scientific conferences	**Sum**
	25

M32 Lectures by invitation from the international meetings:

1. **Prodanovic M.**, Mijailovich S.M, Irving T.C. (2021): "Simulation and interpretation of muscle X-ray diffraction patterns using MUSICO platform", MuscleX2 Virtual Workshop, BioCAT, Argonne National Laboratory, IL, USA, 20-21 May 2021, Link for video presentation: https://bluejeans.com/playback/s/rYYeBZopknQit6b2AoeFqh6c4HOrGfvNVHodRBlBYAlieutwh7wFz5sAWLMCfDrZ.
2. **Prodanovic M.** (2021): "Multiscale Modeling of Twitch Contractions in Cardiac Trabeculae", Online seminar at Sarcomere Society meeting, University of Washington, USA, 18 Feb. 2021.

M33 Papers from the international meetings printed in its entirety:

1. **Prodanovic M.**, Prodanovic D., Stojanovic B., Filipovic N., Jovicic G.R., Mijailovich S.M. (2021): "Estimation of Shear Stress Variation in Extracellular Matrix Caused by Duchenne Muscular Dystrophy", 2021 IEEE 21st International Conference on Bioinformatics and Bionegineering (BIBE), Kragujevac, Serbia, 2021, 25-27 October, pp. 1-6, DOI: 10.1109/BIBE52308.2021.9635402.
2. **Prodanovic M.**, Stojanovic B., Prodanovic D., Filipovic N., Mijailovich S.M. (2021): "Computational Modeling of Sarcomere Protein Mutations and Drug Effects on Cardiac Muscle Behavior", 2021 IEEE 21st International Conference on

Bioinformatics and Bionegineering (BIBE), Kragujevac, Serbia, 2021, 25-27 October, DOI: 10.1109/BIBE52308.2021.9635428

3. Anic M., **Prodanovic M.**, Milenkovic S., Filipovic N., Grujovic N., Zivic F. (2021): "The Review of Materials for Energy Harvesting", 2021 IEEE 21st International Conference on Bioinformatics and Bionegineering (BIBE), Kragujevac, Serbia, 2021, 25-27 October 2021, pp. 1-6, DOI: 10.1109/BIBE52308.2021.9635169.
4. Anic M., **Prodanovic M.**, Milenkovic S., Filipovic N., Grujovic N., Zivic F. (2021): "Electrospinning as the Fabrication Technology for the Energy Harvesting Composites", 38th International Conference on Production Engineering - Serbia, Čačak, Serbia, 2021, 14-15 October, pp. 167-178, ISBN: 978-86-7776-252-0.
5. Grigoriadis G.I., Pezoulas V.C, Roumpi M., Gkois G., Tachos N. S., **Prodanovic M.**, Prodanovic D., Stojanovic B., Mijailovich S.M., Filipovic N., Fotiadis D.I. (2021): "Towards the Development of a Unified Virtual Population Model in Hypertrophic Cardiomyopathy", 2021 IEEE EMBS International Conference on Biomedical and Health Informatics (BHI), Athens, Greece, 2021, 27-30 July. DOI: 10.1109/BHI50953.2021.9508598
6. **Prodanovic M.**, Stojanovic B., Maric M., Prodanovic D., Mijailovich S.M. (2020): "Tuning Cooperativity of Calcium Activation in Cardiac Muscle". In: Filipovic N. (eds) Computational Bioengineering and Bioinformatics. ICCB 2019. Learning and Analytics in Intelligent Systems, vol 11. Springer, Cham. DOI: 10.1007/978-3-030-43658-2_6
7. **Prodanovic M.**, Irving T.C. Stojanovic B., Mijailovich S.M. (2014): "Multiscale Model Predictions of X-ray Diffraction Patterns from Nonuniformly Stretched Actin Filaments". 40th Annual Northeast Bioengineering Conference (NEBEC), Boston, MA, USA, 2014, 25-27 April. DOI: 10.1109/NEBEC.2014.6972910.
8. **Prodanovic M.**, Kostic M., Popovic D.B. (2012): "WiiMote control: Gaming feedback for motivational training of the arm movement". Neural Network Applications in Electrical Engineering (NEUREL), 2012 11th Symposium on, Belgrade, Serbia, 2012, 20-22 Sept. DOI: 10.1109/NEUREL.2012.6419984

M34 Abstracts from the international meetings:

1. **Prodanovic M.**, Prodanovic D., Stojanovic B., Filipovic N., Mijailovich S.M. (2022): "Towards Automated Assessment of Drug Efficacy on Cardiomyopathic Human Heart Function", IEEE International Conference on Biomedical and Health Informatics (BHI-BSN-21), Ioannina, Greece, 2022, 27-30 Sept.
2. Aguado-Sierra J., Quintanas-Corominas A., Butakoff C., Prodanovic D., **Prodanovic M.**, Ivanovic M., Stojanovic B., Filipovic N., Mijailovic S.M., Vazquez M. (2022): "Extreme scale excitation-contraction modelling of the heart: from small molecule-protein interaction to full heart mechanics for drug testing in hypertrophic cardiomyopathy", Virtual Physiological Human (VPH) Conference: Digital twins for personalized treatment development and clinical trials, Porto, Portugal, 2022, 6-9 Sept.
3. Milicevic B., **Prodanovic M.**, Prodanovic D., Milosevic M., Stojanovic B., Mijailovich S.M., Kojic M., Filipovic N. (2022): "Linking biophysical muscle models with finite element solver", 8th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMA2022), Oslo, Norway, 2022, 5-9 June.

4. Mijailovich S.M., **Prodanovic M.**, Poggesi C., Regnier M., Geeves M.A. (2022): "Computational modeling of the effects of drugs in HCM and DCM cardiomyopathies", Biophysical Journal, 121(3), 236a. DOI: 10.1016/j.bpj.2021.11.1578
5. **Prodanovic M.**, Stojanovic B., Prodanovic D., Filipovic N., Mijailovich S.M. (2021): "The Effects of Drugs and Sarcomeric Protein Mutations on Cardiac Muscle Function Estimated by Integrative Modeling Approach", IEEE International Conference on Biomedical and Health Informatics (BHI-BSN-21), Athens, Greece, 2021, 27-30 July.
6. Grigoriadis G.I., Pezoulas V.C, Roumpi M., Gkois G., Tachos N.S., **Prodanovic M.**, Prodanovic D., Stojanovic B., Mijailovich S.M., Filipovic N., Fotiadis D.I. (2021): "On the Development of an in-Silico Cloud Computing Platform for Virtual Patients in Hypertrophic Cardiomyopathy", IEEE International Conference on Biomedical and Health Informatics (BHI-BSN-21), Athens, Greece, 2021, 27-30 July.
7. **Prodanovic M.**, Prodanovic D., Stojanovic B., Poggesi C., Regnier M., Geeves M., Mijailovich S.M. (2021): "Comparative Simulations of Intact Cardiac Muscle Responses from Mice, Rats and Humans: The Effect of Myosin Isoforms", 14th World Congress in Computational Mechanics (WCCM) ECCOMAS Congress 2020, Paris, France, 2021, 11th-15th January.
8. Stojanovic B., **Prodanovic M.**, Prodanovic D., Mijailovich S.M. (2021): "Finite Element Solution for Cardiac Muscle Contraction in Whole Heart", 14th World Congress in Computational Mechanics (WCCM) ECCOMAS Congress 2020, Paris, France, 2021, 11th-15th January.
9. Mijailovich S.M., **Prodanovic M.**, Poggesi C., Regnier M., Geeves M.A. (2020): "Effect of Myosin Isoform on Mechanics in Intact Cardiac Trabeculae from Mice, Rats and Humans", Biophysical Journal, 118(3), 423a. DOI: 10.1016/j.bpj.2019.11.2381
10. Mijailovich S.M., **Prodanovic M.**, Vasovic L., Stojanovic B., Maric M., Prodanovic D., Powers J.D., Davis J., Geeves M.A., Regnier M. (2019): "Modulation of calcium sensitivity and twitch contractions in cardiac muscle with troponin-C mutations: simulations and experiments", Biophysical Journal, 116(3), 116a, DOI: 10.1016/j.bpj.2018.11.654
11. **Prodanovic M.**, Nedic Dj., Irving T.C., Mijailovich S.M. (2015): "Estimation of Local Forces in Myofilaments using X-Ray Diffraction Patterns and Muscle Mechanics Data". Biophysical journal 108, 422a-423a, DOI: 10.1016/j.bpj.2014.11.2312
12. **Prodanovic M.**, Irving T.C., McOwen R., Mijailovich S.M. (2014): "X-Ray Diffraction Pattern of Non-Uniformly Stretched Actin Filament". Biophysical journal 106, 768a, DOI: 10.1016/j.bpj.2013.11.4221
13. Mijailovich S.M., **Prodanovic M.**, Svicevic M., Gilbert R.J., Stojanovic B. (2014): "Molecular Model of Actin-Myosin Energy Landscapes Based on Non-Linear Cross-Bridge Stiffness". BMES Annual Meeting, San Antonio, Texas, USA, 2014, 22-25 October 2014.
14. Irving T.C., **Prodanovic M.**, Stojanovic B., Nedic Dj., Mijailovich S.M. (2014): "X-ray diffraction pattern of nonuniformly stretched actin filament". Myofilament Meeting, Madison, Wisconsin, USA, 2014, 7-10 June.

15. **Prodanovic M.**, Kostic M., Radulovic M. (2012): "Using LabVIEW and Wii to introduce fun in post-stroke rehabilitation". LabView NIDays 2012, Belgrade, Serbia, 2012, 13th November.

Proceedings of national scientific conferences	**Sum**
Monographs of national importance	**Sum**
Scientific papers in national journals	**Sum** 1

M51 Paper in a top journal of national importance:

1. **Prodanovic M.**, Maleševic J., Filipovic M., Maleševic N., Jevtic T. (2013): "Numerical simulation of energy distribution in biological tissues during electrical stimulation". Serbian Journal of Electrical Engineering, Vol. 10 (1): 165-173. DOI: 10.2298/SJEE1301165P

Technical solutions	**Sum**
Patents	**Sum**

CITATION OF SCIENTIFIC PAPERS

Source: Scopus – 35

BRIEF DESCRIPTION OF RESEARCH IN THE PREVIOUS PERIOD

In SilicoFCM project, I worked on the improvements and testing of the multiscale computational platform MUSICO for realistic simulations of muscle contractions and the analysis of experimental results and the modeling of the heart muscle with a special focus on cardiovascular genetic diseases using the MUSICO platform. I was also in charge of analyzing the

effects of genetic mutations and drugs on the contractility of cardiac muscle cells, as well as creating a new simpler muscle micro model for coupling with existing finite element tools in whole heart simulations.

As a consultant on the project "Multiscale Modeling and X-ray Diffraction: A novel approach to understanding heart disease", I worked on the development of software and methodology for the interpretation of X-ray diffraction patterns in living muscle fibers and the prediction of equatorial patterns in the diffraction image of muscles.

BRIEF DESCRIPTION OF PLANNED RESEARCH IN THE NEXT PERIOD

Planed future research includes further improvements of the MUSICO platform and solving the decades-old problem of modeling muscle contraction during muscle lengthening, as well as adding including new sacromeric proteins to the muscle model. Furthermore, I'm planning a work on modeling the contractions of different types of heart muscles using the MUSICO platform, then connecting electrical impulses with heart contractions and modeling the contractions of the entire human heart, bearing in mind that it consists of different types of heart cells, to examine the impact of genetic mutations and drugs on heart contraction. Moreover, the development of a new computer model for simulations of protein mobility experiments in the sarcomere is planned, as well as resuming the work on the development of software for predicting both equatorial and meridional shapes in the diffraction image of muscles.