Curriculum vitae

Date Prepared: January 16, 2026

Name: Radomír Chabiniok

Office Address: Division of Pediatric Cardiology
Department of Pediatrics, UT Southwestern Medical Center
5323 Harry Hines Blvd, Dallas, TX 75390, USA

Work Phone: +12144567311

Work E-Mail: Radomir.Chabiniok@UTSouthwestern.edu

Researcher identifiers: ORCID: 0000-0002-7527-2751

Scopus: 6505897865

Web of Science ID: AAO-9829-2020

Google Scholar: https://scholar.google.com/citations?user=l_-r190AAAAJ&hl=en

Web site: https://profiles.utsouthwestern.edu/profile/195959/radomir-chabiniok.html

Education

Year	Degree	Field of Study *(Thesis title and advisor)*	Institution
1999-2006	MD	General Medicine	2nd Faculty of Medicine, Charles University, Prague, Czech Republic
2002-2007	MSc	Mathematical and Computer Modeling in Physics and Engineering (*Cardiac MRI Data Segmentation Using Partial Differential Equation of Allen-Cahn Type, supervised by Michal Beneš*)	Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic
2007-2010	PhD	Applied Mathematics *(Personalized Biomechanical Heart Modeling for Clinical Applications, supervised by Dominique Chapelle)*	University Paris 6, France
2022	HDR (Habilitation à Diriger des Recherches)	Mechanical and Energetic Engineering (*Biomechanical Modeling for Comprehensive Assessment and Clinical Management in Cardiology*)	Institut Polytechnique de Paris, France

Postdoctoral Training

Year(s)	Titles	Specialty/Discipline (Lab PI for postdoc research)	Institution
2006-2007	Research fellow	Radiodiagnostic and Interventional Radiology Department (MRI lab)	Institute for Clinical and Experimental Medicine in Prague, Czech Republic
2007-2010	PhD	Biomechanical Heart Modeling	French National Institute for Digital Sciences Inria, Paris-Rocquencourt
2011-2015	Post-doc (research associate)	Division of Imaging Sciences and Biomedical Engineering	King's College London

Honors and Awards

Year	Name of Honor/Award	Awarding Organization
2006	2nd Prix de Médicine *(a month scientific visit at MRI research center, University Paris-Sud, hosted by Prof. Jacques Bittoun)*	French Embassy in Czech Republic
2006	3rd place at the Czech and Slovak Student Scientific Conference in Mathematics (category: Applied Mathematics)	Comenius University in Bratislava, Slovak Republic
2023	*Best oral presentation (2nd prize) at FIMH 2023, Lyon, France, for Maria Gusseva (my role: senior author)*	*Scientific Board of the International Conference on Functional Imaging and Modeling of Heart (FIMH)*

Faculty Academic Appointments

Year(s)	Academic Title	Department	Academic Institution
2015-2018	Junior research scientist (~assistant professor)	Research Team MΞDISIM	French National Institute for Digital Sciences Inria, Paris-Saclay, France
2018-2020	Senior research scientist (~associate professor)	Research Team MΞDISIM	French National Institute for Digital Sciences Inria, Paris-Saclay, France
2021-2024	Assistant professor	Dept. of Pediatrics, Division of Pediatric Cardiology	UT Southwestern Medical Center, Dallas, TX, USA
2024-	Associate professor	Dept. of Pediatrics, Division of Pediatric Cardiology	UT Southwestern Medical Center, Dallas, TX, USA

Adjunct / Part-time Appointments

2015-2020 (20% FTE)	Lecturer *(present weekly at St Thomas' Hospital Campus)*	School of Biomedical Engineering & Imaging Sciences	King's College London, UK
2020-2023 (10% FTE)	Researcher	Dept. of Mathematics, Faculty of Nuclear Sciences and Physical Engineering	Czech Technical University in Prague
2023-2024 (10% FTE)	Researcher	Faculty of Mathematics and Physics (Mathematical modeling group)	Charles University, Prague, Czech Republic
2020- Adjunct appointment	Visiting lecturer	School of Biomedical Engineering & Imaging Sciences	King's College London, UK
2021- Adjunct appointment	External collaborator	Research Team MΞDISIM	French National Institute for Digital Sciences Inria, Paris-Saclay, France

Major Administrative/Leadership Positions

Year(s)	Position Title	Institution
2006-	Scientific mentor (participating on scientific direction) for interdisciplinary collaboration between Mathematical modeling group and MRI department	Institute for Clinical and Clinical Medicine IKEM in Prague (MRI) and Czech Technical University in Prague, (mathematical modeling)
2015-2020	In charge of scientific collaboration between Congenital Heart Disease group at St Thomas & Evelina Children's hospital (King's College London) and Inria (cardiac modeling research team MΞDISIM)	King's College London (UK) and French National Institute for Digital Sciences (Inria)
2015-2020	Coordinator of clinical-modeling projects in the MΞDISIM research team	French National Institute for Digital Sciences Inria, Paris-Saclay
2018-2022	PI of TOFMOD Associated Team (created between Inria and UTSW Medical Center Dallas)	French National Institute for Digital Sciences Inria, Paris-Saclay and UTSW Medical Center Dallas
2023-2025	Board of Directors *(as Lead Organizer of the 13th edition, FIMH 2025 in Dallas)*	International Conference on Functional Imaging and Modeling of Heart (FIMH)
2023-	Co-chair of Research Facilitation Committee of Heart Center (Divisions of Pediatric Cardiology and Cardiothoracic Surgery)	UT Southwestern Medical Center and Children's Medical Center, Dallas, TX

Educational Activities

1. Direct Teaching

Date	Course Name, Rotation or Session Topic	Role	Number of Instruction hours	Primary Learner Audience (number)	Sponsoring Department or Organization
Medical and Graduate School (UME) Course Instruction, Small Group Instruction, Clinical Supervision					
Summer 2022	Cardiovascular physiology	Small group teacher	3 h	Medical Students	UTSW School of Medicine
2004-2005	Basic mechanics	Tutorials	30 h	Civil Engineering studnets	Czech Technical University in Prague
Graduate Medical Education (GME) Course Instruction, Small Group Instruction, Clinical Supervision					
2024	SCMR level 1 course	Lecturer	1 hour	Clinical fellows, cardiac MRI researchers	UTSW & Childdren's Medical Center Dallas
2023-2025	MRI Physics	Lecturer	5 hours (yearly)	Advanced Imaging Cardiology fellows	UTSW Dept of Pediatrics
2020	Clinical Cardiovascular Modeling (within International Doctoral School "Modeling of biomaterials")	Lecturer	2 hours	Graduate Students	Charles University in Prague & Heidelberg University & Sorbonne University
2013-2018	Weekly teaching on optimization of MR image acquisition and post-processing for PhD candidates and clinicians	Lecturer	40 / yearly	MRI fellows	King's College London

2. Curriculum Development

Date	Course Name or Curriculum Product	Role	Purpose	Primary Learner Audience	Sponsoring Organization or Institution
2020	International Doctoral School "Modelling of biomaterials"	In Charge of cardiovascular program (and inviting three	Create a course for multi-disciplinary research	Graduate Students	Charles University in Prague & Heidelberg University &

		international faculty members)			Sorbonne University

3. Mentoring and Advising

Date	Mentee Name	Mentee Level/ Program and Institution	Role	Mentee Outcomes, Current Position
2018-2023	Katerina Skardova	PhD candidate (Czech Technical University in Prague, Czech Republic)	PhD supervisor	PhD awarded in 2023, Postdoctoral Fellowship obtained at Institute Polytechnique de Paris, France
2017-2022	Maria Gusseva	PhD candidate (Institute Polytechnique de Paris, France)	PhD supervisor	PhD awarded in 2022, Postdoctoral Fellowship obtained at UT Southwestern Medical Center Dallas
2016-2021	Arthur Le Gall, MD	PhD candidate (Institute Polytechnique de Paris, France)	PhD supervisor	PhD awarded in 2021, attending anesthesiologist position at University Hospital Rennes (France) obtained
2021-2025	Alena Jarolimova	PhD candidate (Charles University in Prague, Czech Republic)	PhD advisor	PhD awarded in 2025. Dr Jarolimova continues works part-time research at Charles University in Prague (postdoc) and in industry.
2014-2018	Bram Ruijsink, MD	PhD candidate (King's College London, UK)	PhD advisor (supervising selected PhD chapters)	PhD awarded in 2018. Dr Ruijsink is continuing his cardiology clinical training
2012-2018	James Wong, MD	PhD candidate (King's College London, UK)	PhD advisor (supervising selected PhD chapters)	PhD awarded in 2018, pediatric cardiology attending obtained at King's College London.
2016 (May-September)	Bruno Burtschell	PhD candidate (University Paris-Saclay, France)	PhD advisor (supervising one PhD chapter)	PhD awarded in 2017. Dr Burtschell now works as a scientist for industry in France.

2012-2015	Myria Hadjicharalambous	PhD candidate (King's College London, UK)	PhD advisor	PhD awarded in 2015. Dr Hadjicharalambous is currently a postdoc in Cyprus.
2021 (January-May)	Rebecca Waugh	Research internship, UTSW (Division of Pediatric Cardiology)	Research supervisor	Peer-reviewed conference paper published, currently MD student at Texas A&M
2017 (June-August)	R.M. Tompkins	Research internship, UTSW (Division of Pediatric Cardiology)	Research supervisor	International Society for Magnetic Resonance Imaging in Medicine (ISMRM) conference abstract accepted
2009 (4 months)	Gregoire Lecourt	Research internship, French National Institute for Digital Sciences (Inria)	Research supervisor	Research report.
2008	Matthew Sinclair	Research internship, French National Institute for Digital Sciences (Inria)	Research supervisor	Dr Sinclair is a scientist in the industry (HeartFlow).

4. Learner Assessment Activities or Tool Development

5. Educational Administration and Leadership

Qualifying examination committees	
2025	Reviewer of PhD thesis of Miroslav Ložek, *Computer modelling of a dyssynchronous heart,* Charles University, Prague, Czech Republic
2020	Examiner of PhD thesis of José Ivan Colorado Cervantes entitled *Theoretical modeling and numerical simulation of cardiac mechanics: toward patient-specific clinical applications for motion assessment,* Roma, Italy
2014	Examiner and reviewer of PhD thesis of Ruth Aris, *Electromechanical Large Scale Computational Models of the Ventricular Myocardium,* Univesitat Politecnica de Catalunya, Spain
2018	Examiner of master's thesis of Radek Galabov, *Analysis of errors during blood velocity and fow measurement using Magnetic resonance: The influence of sequence parameters, technical limits and flow characteristics*, Czech Technical University in Prague, Czech Republic

2018	Examiner of master's thesis of Katerina Solovska (Skardova), *Non-rigid Registration of Medical MRI Data*, Czech Technical University in Prague, Czech Republic
2020	Examiner of bachelor thesis of Niel van der Meer, *Mathematical Modelling in Electrocardiology*, Czech Technical University in Prague, Czech Republic

Interviewer	
2024, 2025	MD and MSTP (MD/PhD) Program Recruitment Interviewer (UT Southwestern Medical Center Dallas)
2023	Pediatric Residency Program Recruitment Interviewer (UT Southwestern Medical Center Dallas)
2022, 2024	Pediatric Cardiology Fellowship Program Recruitment Interviewer (UT Southwestern Medical Center Dallas)

Grant Review Activities

Year(s)	Name of Review Committee	Organization
2020	Swiss National Science Foundation grant	Swiss National Science Foundation grant
2020	Domain Applied and Engineering Sciences (NWO Domain TTW)	Dutch Research Council (NWO)
2023	CE45 panel - Interfaces: mathématiques, sciences du numérique-biologie, santé (Interfaces: mathematics; digital biology sciences; health)	Agence Nationale de la Recherche (ANR), France
2025	Medical Research Council	United Kingdom Research and Innovation

Editorial Activities

Year(s)	Journal Name
Editor/Associate Editor	
2025	Biomechanics and Modeling in Mechanobiology: Guest Editor (Lead) of the Special Issue "Functional Imaging and Modeling of the Heart FIMH 2025" (biomechanics modeling papers)
2025	Medical Image Analysis: Guest Editor (Lead) of the Special Issue "Functional Imaging and Modeling of the Heart FIMH 2025" (medical image analysis papers)
Editorial Board	
N/A	
Ad Hoc Reviewer	
2011-	Lecture Notes in Computer Science (Medical Image Computing & Computer Assisted Intervention conference, MICCAI)
2013-	IEEE Transactions on Medical Imaging (TMI)
2014-	Biomechanics and Modeling in Mechanobiology (BMMB)
2014	Journal of the Mechanical Behavior of Biomedical Materials (JMBBM)

2016	Journal of Biomechanical Engineering
2017	Computational and Mathematical Methods in Medicine
2017	Computer Methods and Programs in Biomedicine
2017	Computers & Structures (C&S)
2017	Journal of Cardiovascular Translational Research
2018-	Simulation: Transactions of the Society for Modeling and Simulation International
2018	Journal of Imaging
2019	Lecture Notes in Computer Science (Functional Imaging and Modeling of Heart conference, FIMH)
2019	Philosophical Transactions of the Royal Society A
2020-	Cardiovascular Engineering and Technology
2021-	Computers in Biology and Medicine
2021	Magnetic Resonance in Medicine
2022	Annals of Biomedical Engineering
2022	Journal of Asian Pacific Society of Cardiology
2023-	Medical Image Analysis
2023-	International Journal of Engineering Science
2024	Journal of Magnetic Resonance Imaging
2025	Heart, Lung and Circulation
2025	The Journal of Physiology
2025	Cardiology in the Young
2025	Journal of Intensive Care Medicine
2025	Archives of Computational Methods in Engineering

Invited Lectures

Year(s)	Title	Location
International		
2026 March	*Title to be provided*	*International Conference "Modeling Blood Flow in the cardiovascular system and artificial devices - recent developments and challenges", Prague, Czech Republic (invited speaker)*
2022 July	Heart biomechanics to predict the effect of intervention in valvular heart diseases	World Congress of Biomechanics 2022 (Taipei, Taiwan), invited by Profs. M. Nash and G. Plank (session "Clinical Applications of Heart Biomechanics")
2022 April	Modeling Biomaterials in Clinical Problems of Cardiology	Biomedical Engineering seminar, Ecole Polytechnique, Palaiseau, France (invited by Prof. Abdul Barakat)
2022 April	Medical image data and biomechanical modeling in translational cardiovascular research	Seminar or Laboratoire Imagerie Biomédicale (LIB), Sorbonne Université, Paris, FR (invited by Drs. Lori Bridal and Nadjia Kachenoura)

2021 June	Biomechanical modeling for congenital heart diseases	Cardiac Atlas Project: Workshop on Congenital Heart Disease (within Functional Imaging and Modeling of Heart conference FIMH2021, Stanford, USA, online)
2021 May	MRI data and biomecanical modeling in translational cardiovascular research	Workshop CardioMRI, Millennium Nucleus in Cardiovascular Magnetic Resonance, Santiago de Chile (online), plenary talk
2021 Feb.	Translational Cardiovascular Modeling	Virtual Physiological Human institute (VPHi) Keynote webinar series (https://www.youtube.com/watch?v=hMaGytP3KJQ)
2020 Feb.	TOFMOD: Tetralogy of Fallot – Modeling of Diseases	International doctoral school on "Modelling of biomaterials", Kacov, Czech Republic
2018 Dec.	Cardiac modeling in clinical practice: Physiology, biophysics & patient-specific management	Children's Heart Center, Motol University Hospital in Prague, Czech Rep. *(invited by Prof. J. Janousek)*
2018 Dec.	Towards clinical applications of cardiac modeling	Mathematical Institute of Charles University in Prague, Czech Republic *(invited by Prof. J. Malek)*
2018 Oct.	Towards clinical applications of cardiac modeling	International Symposium on Modeling, Simulation and Optimization of the Cardiovascular System, Lukasklause Magdeburg, Germany
2018 Oct.	Cardiac modeling for clinical applications: Can biophysics contribute to patients' management?	French Congress of Radiology
2018 Sept.	Clinical cardiac modeling	Institute for Clinical and Experimental Medicine in Prague (IKEM), Czech Republic (invited by *Prof. J. Kautzner*)
2016	Biophysical modeling of cardiac function for clinical applications	UT Southwestern Medical Center, Dallas, Division of Pediatric Cardiology (invited by *Profs. T. Hussain and G. Greil*)
2014	Patient-specific biomechanical heart modeling in clinics	German Heart Center, Munich
2014	Clinical cardiac modeling	Technical University Munich, Germany (invited by *Prof. W. Wall*)
2013	Necas Continuum Mechanics Seminar: Biophysical modelling of cardiovascular system in clinical setup	Mathematical Institute of Charles University in Prague (invited by *Prof. J. Malek*)
2010	Clinical applications of a biomechanical heart model	The First International Workshop on the Role and Impact of Mathematics in Medicine, Paris
National		

2023	Biomechanical modeling for comprehensive assessment and clinical management in cardiology	UT Austin (invited by Prof. Michael Sacks)
Regional/Local		

Technological and Other Scientific Innovations

Innovation
Patent, if any, pending or awarded /If described in print/on web, provide citation

R. Chabiniok, D. Chapelle, A. Le Gall, P. Moireau, F. Vallee. Cardiac device. US, Patent no: US20200253490A1, 2020.
R. Chabiniok, D. Chapelle, A. Le Gall, P. Moireau, F. Vallee. Dispositif cardiaque. France, Patent no: 1758006, 2017.

Service to the Community

Year(s)	Role	Organization or institution
2025 (June)	General Chair of International Conference on Functional Imaging and Modeling of Heart (FIMH 2025), see https://fimh2025.sciencesconf.org	Dallas, USA
2024 (October)	Co-Lead Organizater of Heart Center Research Day (a full day event, gathering all members of the Heart Center (150 registered participants)	UT Southwestern and Children's Medical Center, Dallas
2021 (June)	Organizer of a special theme session on "Multisystem Inflammatory Syndrome in Children (MIS-C, PIMS-TS)" during Functional Imaging and Modeling of Heart conference (FIMH2021)	Stanford, USA
2020 (August)	Organizer of "*TOFMOD workshop*" with 14 international speakers and > 50 participants (satellite event of Virtual Physiological Human Conference VPH 2020)	Paris, France
2020 (February)	Co-organizer of 1-week international doctoral school on "Modelling of biomaterials" (with focus on mechanical and chemical processes), in charge of cardiovascular program	Charles University in Prague & Heidelberg University & Sorbonne University
2018	Co-chair of the section "Research group in cardiac imaging"	French Congress of Radiology (JFR), Paris, France

2018	Organizer of "MRI & Modelling workshop" with 14 international speakers	Inria Saclay Ile-de-France
2013	Organizer of a mini-workshop on "Imaging and clinical modeling" (3 international speakers)	Mathematical Institute of Charles University in Prague, Czech Republic

Bibliography

Peer-Reviewed Publications

My research has been published within the communities of biomechanical modeling, image processing, magnetic resonance imaging and clinical medicine. All of these communities publish their original research works in peer-reviewed journals. The order of authors depends on their contribution, while the senior author is listed as the last.

In addition to the peer-reviewed journals, the communities of biomechanical modeling and image processing publish their original research works in peer-reviewed conference proceedings (typically of 8-10 pages) and these papers are recognized by these communities (e.g. cited by other authors in respected peer-reviewed journals and indexed by SCOPUS). The conference outputs in the communities of clinical medicine (and also magnetic resonance in medicine) are typically only short abstracts (sometimes extended to a few pages). These abstracts are not listed in this document.

Original Research Articles

1.	J. Kovář, R. Fučík, T. Hussain, M. Fares, **R. Chabiniok**: Mathematical modeling of myocardial perfusion using lattice Boltzmann method. Computers and Mathematics with Applications, 2025. https://doi.org/10.1016/j.camwa.2025.12.005
2.	M. Gusseva, N., D.A. Castellanos, S.V. Reddy, T. Hussain, D. Chapelle, **R. Chabiniok**: Objective assessment of cardiac function using patient-specific biophysical modeling based on cardiovascular MRI combined with catheterization. American Journal of Physiology-Heart and Circulatory Physiology, 2025. https://doi.org/10.1152/ajpheart.00232.2025 PMID: 41015406
3.	M. Gusseva, N. Thatte, D.A. Castellanos, P.E. Hammer, S. Ghelani, R. Callahan, T. Hussain, **R. Chabiniok**: Biomechanical modeling combined with pressure-volume loop analysis to aid surgical planning in patients with complex congenital heart disease. Medical Image Analysis, 101, 2025. https://doi.org/10.1016/j.media.2024.103441
4.	R. Fučík, J. Kovář, K. Škardová, O. Polívka, **R. Chabiniok**: Lattice Boltzmann Approach to Mathematical Modeling of Myocardial Perfusion. International Journal for Numerical Methods in Biomedical Engineering, 40(7):e3833, 2024. https://doi.org/10.1002/cnm.3833 PMID38715357
5.	J. Aramburu, B. Ruijsink, **R. Chabiniok**, K. Pushparajah, J. Alastruey: Patient-specific, closed-loop model of the Fontan circulation: calibration, validation and clinical applications. Heliyon, 10(9): E30404, 2024. https://doi.org/10.1016/j.heliyon.2024.e30404 PMID38742066
6.	P. Eichler, R. Galabov, R. Fučík, K. Škardová, T. Oberhuber, P. Pauš, J. Tintěra, and **R. Chabiniok**: Non-Newtonian turbulent flow through aortic phantom: Experimental and computational study using magnetic resonance imaging and lattice Boltzmann method.

	Computers and Mathematics with Applications, 136: 80–94, 2023. https://doi.org/10.1016/j.camwa.2023.01.031
7.	N. Gaddum, D. Dillon-Murphy, R. Arm, I. Rafiq, **R. Chabiniok**, G. Morgan, T. Schaeffter, T. Hussain: In Silico Modelling of Aortic Strain and Strain Rate in Aortic Coarctation Treated with Stent Angioplasty with Comparison to Clinical Cohorts. Applications in Engineering Science, 2022. https://doi.org/10.1016/j.apples.2022.100123
8.	**R. Chabiniok**, B. Burtschell, D. Chapelle, and P. Moireau: Dimensional reduction of a poromechanical cardiac model for myocardial perfusion studies. Applications in Engineering Science, 2022. https://doi.org/10.1016/j.apples.2022.100121
9.	**R. Chabiniok***, J. Hron, A. Jarolímová, J. Málek, K. R. Rajagopal, K. Rajagopal, H. Švihlová, K. Tůma: Three-dimensional flows of incompressible Navier-Stokes fluids in tubes containing a sinus, with varying slip conditions at the wall. International Journal of Engineering Science, 180: pp. 103479, 2022. https://doi.org/10.1016/j.ijengsci.2022.103749 **Alphabetical order of authors (mathematical community)*
10.	D. Marlevi, J. Mariscal-Harana, N.S. Burris, J. Sotelo, B. Ruijsink, M. Hadjicharalambous, L. Asner, E. Sammut, **R. Chabiniok**, S. Uribe, R. Winter, P. Lamata, J. Alastruey, D. Nordsletten: Altered aortic hemodynamics and relative pressure in patients with dilated cardiomyopathy. Journal of Cardiovascular Translational Research, 15(4): pp. 692–707 2022. https://doi.org/10.1007/s12265-021-10181-1
11.	M. Gusseva, T. Hussain, C. Hancock Friesen, G. Greil, D. Chapelle, **R. Chabiniok**: Prediction of ventricular mechanics after pulmonary valve replacement in tetralogy of Fallot by biomechanical modeling: A step towards precision healthcare. Annals of Biomedical Engineering, 49(12): pp. 3339-3348, 2021. https://doi.org/10.1007/s10439-021-02895-9
12.	M. Gusseva, T. Hussain, C. Hancock Friesen, P. Moireau, A. Tandon, G. Greil, K. Hasbani, D. Chapelle, **R. Chabiniok**: Biomechanical Modeling to Inform Pulmonary Valve Replacement in Tetralogy of Fallot Patients after Complete Repair. Canadian Journal of Cardiology, 37: pp.1798-1807, 2021. https://doi.org/10.1016/j.cjca.2021.06.018
13.	C. Mauger, S. Govil, **R. Chabiniok**, K. Gilbert, S. Hegde, T. Hussain, A.D. McCulloch, C.J. Occleshaw, J. Omens, J. Perry, K. Pushparajah, A. Suinesiaputra, A.A. Young: Right-Left Ventricular Shape Variations in Tetralogy of Fallot: Associations with Pulmonary Regurgitation. Journal of Cardiovacular Magnetic Resonance, 23(105), 2021. https://doi.org/10.1186/s12968-021-00780-x
14.	D.A. Castellanos, K. Skardova, A. Bhattaru, E. Berberoglu, G. Greil, A. Tandon, J. Dillenbeck, B. Burkhardt, T. Hussain, M. Genet, **R. Chabiniok**: Left ventricular torsion obtained using equilibrated warping in patients with repaired Tetralogy of Fallot. Pediatric Cardiology, 42(6): pp.1275-1283, 2021. https://doi.org/10.1007/s00246-021-02608-y
15.	**R. Chabiniok***, J. Hron, A. Jarolímová, J. Málek, K. R. Rajagopal, K. Rajagopal, H. Švihlová, K. Tůma: A benchmark problem to evaluate implementational issues for three-dimensional flows of incompressible fluids subject to slip boundary conditions. Applications in Engineering Science, 6: p. 100038, 2021. https://doi.org/10.1016/j.apples.2021.100038 **Alphabetical order of authors (mathematical community)*
16.	K. Skardova, T. Oberhuber, J. Tintera, **R. Chabiniok**: Signed-distance function based non-rigid registration of image sequences with varying image intensity. Series S of Discrete and Continuous Dynamical Systems, 14 (3): pp.1145-1160, 2021. https://doi.org/10.3934/dcdss.2020386
17.	H. Mella, J. Mura, H. Wang, M. Taylor, **R. Chabiniok**, J. Tintera, J. Sotelo, and S. Uribe: HARP-I: A Harmonic Phase Interpolation Method for the Estimation of Motion from Tagged

	MR Images. IEEE Transections on Medical Imaging, 40(4): 1240-1252, 2021. https://doi.org/10.1109/TMI.2021.3051092
18.	A. Le Gall, F. Vallee, K. Pushparajah, T. Hussain, A. Mebazaa, D. Chapelle, E. Gayat, **R. Chabiniok**: Monitoring of cardiovascular physiology augmented by a patient-specific biomechanical model during general anesthesia. A proof of concept study. PLoS ONE 15(5): e0232830, 2020. https://doi.org/10.1371/journal.pone.0232830
19.	R. Fučík, R. Galabov, P. Pauš, P. Eichler, J. Klinkovský, J. Tintěra, **R. Chabiniok**: Investigation of phase contrast magnetic resonance imaging underestimation of turbulent flow through the aortic valve phantom: Experimental and computational study by using lattice Boltzmann method. Magnetic Resonance Materials in Physics, Biology and Medicine (MAGMA), 33(5): pp.649-662, 2020. https://doi.org/10.1007/s10334-020-00837-5
20.	B. Ruijsink, K. Zugaj, J. Wong, K. Pushparajah, T. Hussain, P. Moireau, R. Razavi, D. Chapelle, **R. Chabiniok**: Dobutamine stress testing in patients with Fontan circulation augmented by biomechanical modeling. PLoS ONE, 15(2):e0229015, 2020. https://doi.org/10.1371/journal.pone.0229015
21.	M. R. Pfaller, J. M. Hoermann, M. Weigl, A. Nagler, **R. Chabiniok**, C. Bertoglio, W. A. Wall: The importance of the pericardium for cardiac biomechanics. Biomechanics and Modeling in Mechanobiology, 18(2): 503–529, 2019. https://doi.org/10.1007/s10237-018-1098-4
22.	J. Wong, **R. Chabiniok**, S.M. Tibby, K. Pushparajah, E. Sammut, D.S, Celermajer, D. Giese, T. Hussain, G.F. Greil, T. Schaeffter, R. Razavi: Exploring kinetic energy as a new marker of cardiac function in the single ventricle circulation, Journal of applied physiology (Bethesda, Md. : 1985), 125: 889–900, 2018. https://doi.org/10.1152/japplphysiol.00580.2017
23.	J.M. Hoermann, C. Bertoglio, M. Kronbichler, M.R. Pfaller**, R. Chabiniok**, W.A. Wall: An adaptive Hybridizable Discontinuous Galerkin approach for cardiac electrophysiology, International Journal For Numerical Methods In Biomedical Engineering, 34(5):e2959, pp. 1–18, 2018, doi: 10.1002/cnm.2959. 2018.
24.	L. Asner, M. Hadjicharalambous, **R. Chabiniok,** D. Peressutti, E. Sammut, J. Wong, G. Carr-White, R. Razavi, A. King, N. Smith, J. Lee, D. Nordsletten: Patient-Specific Modeling For Left Ventricular Mechanics Using Data-Driven Boundary Energies, Computer Methods in Applied Mechanics and Engineering, 314: pp. 269–295, 2017. https://doi.org/10.1016/j.cma.2016.08.002
25.	M. Hadjicharalambous, L. Asner, **R. Chabiniok**, E. Sammut, J. Wong, D. Peressutti, E. Kerfoot, A. King, J. Lee, R. Razavi, N. Smith, G. Carr-White, D. Nordsletten: Non-invasive Model-Based Assessment of Passive Left-Ventricular Myocardial Stiffness in Healthy Subjects and in Patients with Non-ischemic Dilated Cardiomyopathy, Annals of biomedical engineering, 45(3):605– 618, 2017. https://doi.org/10.1007/s10439-016-1721-4
26.	J. Wong, **R. Chabiniok,** A. de Vecchi, N. Dedieu, E. Sammut, T. Schaeffter, R. Razavi: Age-related changes in intra-ventricular kinetic energy: a physiological or pathological adaptation?, American Journal of Physiology (Heart and Circulatory Physiology): 310(6): H747-H755, 2016. https://doi.org/10.1152/ajpheart.00075.2015
27.	L. Asner, M. Hadjicharalambous**, R. Chabiniok**, D. Peresutti, E. Sammut, J. Wong, G. Carr-White, P. Chowienczyk, J. Lee, A. King, N. Smith, R. Razavi, D. Nordsletten: Estimation of passive and active properties in the human heart using 3D tagged MRI, Biomechanics and Modeling in Mechanobiology, 15(5):1121–1139, 2016. DOI: 10.1007/s10237-015-0748-z
28.	M. Hadjicharalambous, **R. Chabiniok**, L. Asner, E. Sammut, J. Wong, G. Carr-White, J. Lee, R. Razavi, N. Smith, D. Nordsletten: Analysis of passive cardiac constitutive laws for

	parameter estimation using 3D tagged MRI, Biomechanics and Modeling in Mechanobiology, 14(4):807–828, 2015. https://doi.org/10.1007/s10237-014-0638-9
29.	A.N. Cookson, J. Lee, C. Michler, **R. Chabiniok**, E. Hyde, D. Nordsletten, N. P. Smith: A Spatially-Distributed Computational Model to Quantify Behaviour of Contrast Agents in MR Perfusion Imaging, Medical Image Analysis, Volume 18(7), pp. 1200–1216, 2014. https://doi.org/10.1016/j.media.2014.07.002
30.	M. Caruel**, R. Chabiniok**, P. Moireau, Y. Lecarpentier, D. Chapelle: Dimensional reductions of a cardiac model for effective validation and calibration, Biomechanics and Modeling in Mechanobiology, Volume 13(4): pp. 897-914, 2014. https://doi.org/10.1007/s10237-013-0544-6
31.	E.R. Hyde, A.N.Cookson, J. Lee, C. Michler, A. Goyal, T. Sochi, **R. Chabiniok**, M. Sinclair, D.A. Nordsletten, J. Spaan, J.P.H.M. van den Wijngaard, M. Siebes, N.P. Smith: Multi-Scale Parameterisation of a Myocardial Perfusion Model Using Whole-Organ Arterial Networks, Annals of Biomedical Engineering, 42(4):797–811, 2014, doi: 10.1007/s10439-013-0951-y
32.	**R. Chabiniok**, R. Maca, M. Benes, J. Tintera: Segmentation of MRI data by means of non-linear diffusion, Kybernetika, 49(2): pp. 301–318, 2013.
33.	E. Hyde, C. Michler, J. Lee, A.N. Cookson**, R. Chabiniok**, D.A. Nordsletten, N.P. Smith: Parameterisation of multi-scale continuum perfusion models from discrete vascular networks, Med Biol Eng Comput, 51(5):557–570, 2013, DOI 10.1007/s11517-012-1025-2
34.	C. Michler, A. Cookson, **R. Chabiniok**, E. Hyde, J. Lee, M. Sinclair, T. Sochi, A. Goyal, G. Vigueras, D. Nordsletten, N. Smith: A computationally efficient framework for the simulation of cardiac perfusion using a multi-compartment Darcy porous-media flow model, International Journal For Numerical Methods In Biomedical Engineering, 29(2): pp. 217–232, 2013. https://doi.org/10.1002/cnm.2520
35.	A. N. Cookson, J. Lee, C. Michler, **R. Chabiniok**, E. Hyde, D. A. Nordsletten, M. Sinclair, M. Siebes, N. Smith: Novel porous mechanical framework for modelling the interaction between coronary perfusion and myocardial mechanics, Journal of Biomechanics, 45(5): pp. 850–855, 2012. https://doi.org/10.1016/j.jbiomech.2011.11.026
36.	M. Sermesant, **R. Chabiniok**, P. Chinchapatnam, T. Mansi, F. Billet, P. Moireau, J.-M. Peyrat, K.C.L. Wong, J. Relan, K. Rhode, M. Ginks, P. Lambiase, H. Delingette, M. Sorine, A. Rinaldi, D. Chapelle, R. Razavi, N. Ayache: Patient-Specific Electromechanical Models of the Heart for the Prediction of Pacing Acute Effects in CRT: a Preliminary Clinical Validation, Medical Image Analysis, 16(1): pp. 201-215, 2012. https://doi.org/10.1016/j.media.2011.07.003
37.	**R. Chabiniok,** P. Moireau, J.-F. Deux, P.-F. Lesault, A. Rahmouni, D. Chapelle: Estimation of tissue contractility from cardiac cine-MRI using a biomechanical heart model, Biomechanics and Modeling in Mechanobiology, 11(5): pp. 609–630, 2012. https://doi.org/10.1007/s10237-011-0337-8

Letters to Editor

1.	**R. Chabiniok**, V. Zaha: Cardiac Digital Twins: Modeling the Arrhythmic Substrate of Chemotherapy. The Journal of Physiology, 2026 (translational perspective paper). DOI 10.1113/JP290313
2.	M. Gusseva, D.A. Castellanos, J. S. Greer, M. Abdelghafar Hussein, K. Hasbani, G. Greil, S. V. Reddy, T. Hussain, D. Chapelle, **R. Chabiniok**: Time-synchronization of invasive cardiac magnetic resonance data using a biomechanical model for pressure-volume loop analysis.

	Journal of Magnetic Resonance Imaging (JMRI), 57(1): pp. 320-323, 2023. https://doi.org/10.1002/jmri.28216

Reviews

1.	G. Hiremath, S. Batlivala, R. Callahan, N. Thatte, T. Rockefeller, H. Nawaytou, S. V. Reddy, T. Hussain, **R. Chabiniok**, R. Butts, J. Vettukattil, E. O. Aregullin, N. Aldweib, D. Burkhoff, M. I. Brener: Clinical applications of Pressure-Volume assessment in congenital heart disease. Journal of the Society for Cardiovascular Angiography & Interventions, 2023. https://doi.org/10.1016/j.jscai.2023.100599
2.	R. Galabov, K. Škardová, **R. Chabiniok**, T. Oberhuber, R. Fučík, P. Eichler, J. Kovář, P. Pauš, A. Wodecki, J. Tintěra: Experience with the use and processing of data from magnetic resonance flow measurements with the 4D Flow sequence (In Czech), Czech Radiology, Ces Radiol 76(4): pp. 249–255, 2022.
3.	**R. Chabiniok**, L. Sukupova, D. Kautznerova, and J. Tintera: Cardiovascular MRI - review of current state and new perspectives (In Czech), Czech Radiology, Ces Radiol 71(4): pp. 279–290, 2017.
4.	**R. Chabiniok,** V. Wang, M. Hadjicharalambous, L. Asner, J. Lee, M. Sermesant, E. Kuhl, A. Young, P. Moireau, M. Nash, D. Chapelle, D. Nordsletten: Multiphysics and multiscale modelling, data–model fusion and integration of organ physiology in the clinic: ventricular cardiac mechanics, Interface Focus, 6(2), 2016. http://dx.doi.org/10.1098/rsfs.2015.0083
5.	F. Nolte, E. R. Hyde, C. Rolandi, J. Lee, P. van Horssen, K. Asrress, J. P. H. M. van den Wijngaard, A. N. Cookson, T. van de Hoef, **R. Chabiniok**, R. Razavi, C. Michler, G. L. T. F. Hautvast, J. J. Piek, M. Breeuwer, M. Siebes, E. Nagel, N. Smith, J. A. E. Spaan: Myocardial perfusion distribution and coronary arterial pressure and flow signals: clinical relevance in relation to multiscale modeling, a review, Medical and Biological Engineering and Computing, 51(11), pp. 1271–1286, 2013. https://doi.org/10.1007/s11517-013-1088-8

Book chapters **(peer-reviewed)**

1.	**R. Chabiniok**, M. Gusseva, M. Bano, T. Hussain: Biomechanical Modeling for Congenital Heart Diseases, Book Chapter; accepted & to appear in "Biomechanics of the Heart - From Patient to Model and Back" (editors Peter Bovendeerd, Patrick Clarysse, Pierre Croisille, Martyn Nash)
2.	**R. Chabiniok,** K. Škardová, R. Galabov, P. Eichler, M. Gusseva, R. Fučík, J. Janoušek, J. Tintěra, T. Oberhuber, T. Hussain: Translational Cardiovascular Modeling, Tetralogy of Fallot and Modeling of Diseases. In: J. Málek, E. Süli (eds) Modeling Biomaterials. Nečas Center Series, pp. 241-276. Birkhäuser, Cham, 2021. https://doi.org/10.1007/978-3-030-88084-2_6
3.	J. Lee, A. Cookson, **R. Chabiniok**, S. Rivolo, E. Hyde, M. Sinclair, C. Michler, T. Sochi, N. Smith: Multiscale Modelling of Cardiac Perfusion, in A. Quarteroni: Modeling the heart and the circulatory system, pp. 51–96, Springer, Switzerland, 2015. https://doi.org/10.1007/978-3-319-05230-4_3

Book (Editor)

1.	**R. Chabiniok,** Q. Zou, T. Hussain, H. H. Nguyen, V. G. Zaha, M. Gusseva: Functional Imaging and Modeling of the Heart: 13th International Conference, FIMH 2025, Dallas, TX, USA, June 1–5, 2025, Proceedings, Part I, Vol. LNCS 15672, Springer, 2025. doi: https://doi.org/10.1007/978- 3- 031- 94559- 5.
2.	**R. Chabiniok**, Q. Zou, T. Hussain, H. H. Nguyen, V. G. Zaha, M. Gusseva: Functional Imaging and Modeling of the Heart: 13th International Conference, FIMH 2025, Dallas, TX, USA, June 1–5, 2025, Proceedings, Part II, Vol. LNCS 15673, Springer, 2025. doi: https://doi.org/10.1007/978- 3- 031- 94562- 5

Conference Proceedings **(peer-reviewed)**

1.	J. Bures, R. Fucik, **R. Chabiniok**: Geometry Optimization of Idealized Total Cavopulmonary Connection Using a CFD-Based Framework, Proc. of Functional Imaging and Modeling of Heart FIMH 2025, Volume 15673 of Lecture Notes in Computer Science (LNCS), pp. 397–406, Springer 2025.
2.	M. Gusseva, N. Thatte, D.A. Castellanos, P.E. Hammer, S. Ghelani, R. Callahan, T. Hussain, **R. Chabiniok**: Biomechanical model to aid surgical planning in complex congenital heart diseases, Proc. of Functional Imaging and Modeling of Heart FIMH 2023, Volume 13958 of Lecture Notes in Computer Science (LNCS), pp. 616–625, Springer 2023.
3.	K. Skardova, T. Hussain, M. Genet, **R. Chabiniok**: Effect of spatial and temporal resolution on the accuracy of motion tracking using 2D and 3D cine cardiac magnetic resonance imaging, Proc. of Functional Imaging and Modeling of Heart FIMH 2023, Volume 13958 of Lecture Notes in Computer Science (LNCS), pp. 235–244, Springer 2023.
4.	R. Waugh, M. A. Hussein, J. Weller, K. Sharma, G. Greil, J. Kahn, T. Hussain, **R. Chabiniok**: Cardiac modeling for Multisystem Inflammatory Syndrome in Children (MIS-C, PIMS-TS), Proc. of Functional Imaging and Modeling of Heart FIMH 2021, Volume 12738 of Lecture Notes in Computer Science (LNCS), pp. 435-446, Springer 2021. https://doi.org/10.1007/978-3-030-78710-3_42
5.	M. Gusseva, J. S. Greer, D.A. Castellanos, M.A. Abdelghafar Hussein, G. Greil, S. Reddy, T. Hussain, D. Chapelle, **R. Chabiniok**: Model-assisted time-synchronization of cardiac MR image and catheter pressure data, Proc. of Functional Imaging and Modeling of Heart FIMH 2021, Volume 12738 of Lecture Notes in Computer Science (LNCS), pp. 362-372, Springer 2021. https://doi.org/10.1007/978-3-030-78710-3_35
6.	K. Skardova, M. Rambausek, **R. Chabiniok**, M. Genet: Mechanical and Imaging Models-based Image Registration, Proc. of ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing (VipIMAGE) 2019, Volume 34 of Lecture Notes in Computational Vision and Biomechanics, pp. 77-85, Springer, Cham. https://doi.org/10.1007/978-3-030-32040-9_9
7.	A. Le Gall, F. Vallee, D. Chapelle, **R. Chabiniok**: Minimally-invasive multiple-beat estimation of patient-specific end-systolic elastance using a biomechanical heart model, Proc. of Functional Imaging and Modeling of Heart FIMH 2019, Volume 11504 of Lecture Notes in Computer Science (LNCS), pp. 266-275, Springer 2019. https://doi.org/10.1007/978-3-030-21949-9_29
8.	B. Ruijsink, K. Zugaj, K. Pushparajah, **R. Chabiniok**: Model-based indices of early-stage cardiovascular failure and its therapeutic management in Fontan patients, Proc. of Functional Imaging and Modeling of Heart FIMH 2019, Volume 11504 of Lecture Notes in Computer Science (LNCS), pp. 379-387, Springer 2019. https://doi.org/10.1007/978-3-030-21949-9_41

9.	**R. Chabiniok**, G. Bureau, A. Groth, J. Tintera, J. Weese, D. Chapelle, P. Moireau: Cardiac displacement tracking with data assimilation combining a biomechanical model and an automatic contour detection, Proc. of Functional Imaging and Modeling of Heart FIMH 2019, Volume 11504 of Lecture Notes in Computer Science (LNCS), pp. 405-414, Springer 2019.
10.	**R. Chabiniok**, P. Moireau, C. Kiesewetter, T. Hussain, R. Razavi, D. Chapelle: Assessment of atrioventricular valve regurgitation using biomechanical cardiac modeling, Proc. of FIMH 2017, Volume 10263 of Lecture Notes in Computer Science (LNCS), pp. 401–411, Springer 2017. https://doi.org/10.1007/978-3-319-59448-4_38
11.	E. Kerfoot, L. Fovargue, S. Rivolo, W. Shi, D. Rueckert, D.Nordsletten, J. Lee, **R. Chabiniok**, R. Razavi: Eidolon: Visualization and Computational Framework for Multi-Modal Biomedical Data Analysis, Proc. of Medical Imaging and Augmented Reality (MIAR) 2016, Volume 9805 of Lecture Notes in Computer Science (LNCS), pp. 425–437, 2016. https://doi.org/10.1007/978-3-319-43775-0_39
12.	**R. Chabiniok**, E. Sammut, M. Hadjicharalambous, L. Asner, D. Nordsletten, R. Razavi, N. Smith: Steps towards quantification of the cardiological stress exam, Proc. of Functional Imaging and Modeling of Heart (FIMH) 2015, Volume 9126 of Lecture Notes in Computer Science (LNCS), pp. 12–20, Springer 2015. https://doi.org/10.1007/978-3-319-20309-6_2
13.	D. Chapelle, A. Felder, **R. Chabiniok**, A. Guellich, J.-F. Deux, T. Damy: Patient-specific biomechanical modeling of cardiac amyloidosis – A case study, Proc. of FIMH 2015, Volume 9126 of Lecture Notes in Computer Science (LNCS), pp. 295–303, Springer 2015. https://doi.org/10.1007/978-3-319-20309-6_34
14.	**R. Chabiniok**, K. Bhatia, A. King, D. Rueckert, N. Smith: Manifold learning for cardiac modeling and estimation framework, Proc. of The Statistical Atlases and Computational Modeling of the Heart (STACOM) workshop, Volume 8896 of Lecture Notes in Computer Science (LNCS), pp. 284–294, Springer 2015. https://doi.org/10.1007/978-3-319-14678-2_30
15.	**R. Chabiniok**, J. Wong, D. Giese, D. Nordsletten, W. Shi, G. Greil, D. Rueckert, R. Razavi, T. Schaeffter, N. Smith: Flow analysis in cardiac chambers combining phase contrast, 3D tagged and cine MRI, Proc. of FIMH 2013, Volume 7945 of Lecture Notes in Computer Science (LNCS), pp. 360–369, Springer 2013. https://doi.org/10.1007/978-3-642-38899-6_43
16.	M. Caruel, **R. Chabiniok**, P. Moireau, Y. Lecarpentier, D. Chapelle: Dimensional reduction of cardiac models for effective validation and calibration, Proc. of FIMH 2013, Volume 7945 of Lecture Notes in Computer Science (LNCS), pp. 259–267, Springer 2013. https://doi.org/10.1007/978-3-642-38899-6_31
17.	**R. Chabiniok**, P. Moireau, J.-F. Deux, P.F. Lesault, A. Rahmouni, D. Chapelle: Trials on Tissue Contractility Estimation from Cardiac Cine MRI Using a Biomechanical Heart Model, Proc. of FIMH 2011, Volume 6666 of Lecture Notes in Computer Science (LNCS), pp. 304–312, Springer 2011. https://doi.org/10.1007/978-3-642-21028-0_38
18.	A. Imperiale, **R. Chabiniok**, P. Moireau and D. Chapelle: Constitutive Parameter Estimation Methodology Using Tagged-MRI Data, Proc. of FIMH 2011, Volume 6666 of Lecture Notes in Computer Science (LNCS), pp. 304– 312, Springer 2011. https://doi.org/10.1007/978-3-642-21028-0_52
19.	K.C.L. Wong, F. Billet, T. Mansi, **R. Chabiniok**, M. Sermesant, H. Delingette, N. Ayache: Cardiac motion estimation using a proactive deformable model: Evaluation and sensitivity analysis, in STACOM MICCAI Workshop on Statistical Atlases and Computational Models of the Heart: Mapping Structure and Function, Volume 6364 of Lecture Notes in Computer Science (LNCS), Beijing, China, 2010. https://doi.org/10.1007/978-3-642-15835-3_16
20.	M. Sermesant, F. Billet, **R. Chabiniok**, T. Mansi, P. Chinchapatnam, P. Moireau, J.M. Peyrat, K. Rhode, M. Ginks, P. Lambiase, S. Arridge, H. Delingette, M. Sorine, A. Rinaldi, D.

	Chapelle, R. Razavi, N. Ayache: Personalised electromechanical model of the heart for the prediction of the acute effects of cardiac resynchronisation therapy, Proc. of FIMH 2009, Volume 5528 of Lecture Notes in Computer Science (LNCS), pp. 239–248, Springer 2009. https://doi.org/10.1007/978-3-642-01932-6_26
21.	**R. Chabiniok,** D. Chapelle, P.F. Lesault, A. Rahmouni, J.F. Deux: Validation of a biomechanical heart model using animal data with acute myocardial infarction, In CI2BM09 - MICCAI Workshop on Cardiovascular Interventional Imaging and Biophysical Modelling, London United Kingdom, 2009.
22.	**R. Chabiniok**, J.Tintera: Cardiac MRI Data Segmentation Using the Partial Differential Equation of Allen–Cahn Type, Proceedings of the Czech-Japanese Seminar in Applied Mathematics 2006, Volume 6 of COE lecture note: Kyushu University, 2007.

Proceedings of Meetings

1.	M. Artzrouni, C. B. Begg, **R. Chabiniok**, J. Clairambault, A. J. E. Foss, J. Hargrove, E. K. Lee, J. H. Siggers, M. Tindall: The first international workshop on the role and impact of mathematics in medicine: A collective account (meeting report), Am J Transl Res 2011;3(5):492–497.