

DR RADOSTIN DIMOV SIMITEV

MSc **DrRerNat** PGCert DipHE, FHEA CMath FIMA

Curriculum Vitae — Glasgow, 2021-09-12



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1. Personal Information

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E-mail: Radostin.Simtev@glasgow.ac.uk
URL: <http://www.maths.gla.ac.uk/~rs>

Date of Birth: 1976-01-29
Place of Birth: Stara Zagora, Bulgaria
Nationality: Bulgarian
Family Status: Married; Two children
Profession: Applied Mathematics & Physics
Languages: English, Bulgarian (fluent),
Russian, German (read)

2. Present Appointments

Since 2016 *Position:* **Reader in Mathematics**
Institution: School of Mathematics & Statistics, University of Glasgow, Glasgow, UK.
Key Roles: (a) Conduct internationally leading research in Applied Mathematics; (b) Teach and supervise students at all levels; (c) Undertake academic administrative roles; (d) Maintain continuing professional development.
Aspirations: (a) Achieve substantial impact by applying mathematics; (b) Sustain an outstanding publication record and research reputation; (c) Secure routinely major funding for research and support own research group; (d) Be an inspiring teacher; (e) Be efficient and proactive in management/leadership roles.

Since 2014 *Position:* **External Examiner of Applied Mathematics Honours & MSci Programmes**
Institution: School of Mathematics & Statistics, University of St Andrews, UK.

3. Employment History

3.1. Main Appointments

2013 – 2016 *Position:* **Senior Lecturer in Mathematics**
2006 – 2013 *Position:* **Lecturer in Mathematics**
Institution: School of Mathematics & Statistics, University of Glasgow, Glasgow, UK.
Details: Roles and aspirations same as in present post.

2004 – 2006 *Position:* **Senior Post-Doctoral Research Assistant**
Institution: Dept of Mathematical Sciences, University of Liverpool, Liverpool, UK.
Funding: Engineering and Physical Sciences Research Council (EPSRC) grant, UK.
Key Roles: (a) Research on the project *Analytical Approach to Realistic Models of Excitation Propagation in Cardiac Tissue*; (b) Assist in teaching.
Aspirations: Were to (a) Become a highly-skilled and independent scientist; (b) Enter a new research field; (c) Progress to a permanent academic post.

2000 – 2004 *Position:* **Wissenschaftlicher Mitarbeiter (Doctoral Research Assistant)**
Institution: Institute of Physics, University of Bayreuth, D-95440 Bayreuth, Germany.
Key Roles: (a) Research on the project *Numerical Simulations of Models for Planetary and Stellar Dynamos*; (b) Assist in teaching.
Aspirations: Were to (a) Earn a Doctorate; (b) Launch a scientific career.

□ 3.2. External and Visiting Positions

Since 2002 Held 7 external positions – see section on Esteem.

□ 3.3. Editorial Position

Since 2011 Member of the Editorial Board of [ISRN Thermodynamics](#), ISSN: 2356-7872.

■ 4. Academic and Professional Qualifications

□ 4.1. Main Qualifications and Formal Certificates

2017-02-08	<i>Degree:</i>	Chartered Mathematician (CMath)	2017-02-09
	<i>Institution:</i>	The Institute of Mathematics and its Applications, UK	
2006 – 2008	<i>Degree:</i>	Postgraduate Certificate (PGCert)	2008-10-22
	<i>Subject:</i>	Academic Practice (accredited by the UK Higher Education Academy)	
	<i>Institution:</i>	University of Glasgow, Learning & Teaching Centre, Glasgow, UK	
2000 – 2004	<i>Degree:</i>	<u>DOCTOR RERUM NATURALIUM (DR.RER.NAT. (PHD))</u> ¹	2004-05-26
	<i>Subject:</i>	Theoretical and Computational Physics	
	<i>Institution:</i>	University of Bayreuth, Institute of Physics, Bayreuth, Germany	
	<i>Adviser:</i>	Prof. F.H. Busse	
	<i>PhD Thesis:</i>	<i>Convection and Magnetic Field Generation in Rotating Spherical Fluid Shells</i>	
	<i>Honors:</i>	magna cum laude	
1995 – 2000	<i>Degree:</i>	Master of Science (MSc)	2000-07-13
	<i>Subject:</i>	Physics (Theoretical, Nuclear and Particle Physics)	
	<i>Institution:</i>	St K Ohridski University of Sofia, Faculty of Physics, Sofia, Bulgaria	
	<i>Grades:</i>	Excellent (averaged over 40 subject exams : 5.95 out of 6.00; viva: 6.00 of 6.00)	
1996 – 1998	<i>Degree:</i>	Diploma of Higher Education (DipHE)	1998-07-08
	<i>Subject:</i>	Computing and Information Technologies	
	<i>Institution:</i>	St I Rilski University of Mining and Geology, Open Faculty, Sofia, Bulgaria	
	<i>Grades:</i>	Excellent (exams: 6.00 out of 6.00; viva: 6.00 out of 6.00)	
1983 – 1995	<i>Degree:</i>	Diplomas in Pre-University Education	1995-06-23
	<i>Subjects:</i>	Bulgarian National Primary & Secondary Education Curriculum (with enhanced English & Mathematics)	
	<i>Institution:</i>	R Rolland English Language High School, Stara Zagora, Bulgaria	
	<i>Grades:</i>	Excellent (5.97 out of 6.00)	
Miscellanea	<i>Brainbench</i>	Certificate in Web Design Concepts	2011-10-08
	<i>MSOR</i>	Certificate Induction to Teaching Maths & Stats	2006-11-08
	<i>Brainbench</i>	Certificate in Fortran 77	2001-01-13
	<i>Brainbench</i>	Certificate in Unix Korn Shell Scripting	2001-01-16
	<i>ETS Princeton</i>	TOEFL Certificate in English (Total: 263 of 300; 93rd centile)	2000-01-19

¹Highest degree. <http://www.baynat.uni-bayreuth.de/de/doctorate-regulations>

DVLA/MVR UK/BG Driving license (B,B1,f,k,p)

1994-07-20

■ 5. Esteem

□ 5.1. External Examiner Position

Since 2014 *Position:* **External Examiner of Applied Mathematics Honours & MSci Programmes**
Institution: School of Mathematics & Statistics, University of St Andrews, UK.

□ 5.2. Externally-Funded Visiting Positions

- 2015, 1 mo. *Position:* **Visiting Researcher**
Institution: NASA Ames Research Center, Moffett Field, AND UCLA Los Angeles, CA, US.
- 2013 & 2012 *Position:* **Visiting Research Scholar**
 (2 + 9 mos.) *Institutions:* Hansen Experimental Physics Laboratory, Stanford University, Stanford, US
 AND Institute of Geophysics, University of California, Los Angeles, CA, US.
- 2013 & 2011 *Position:* **Visiting Researcher**
 (1 + 1 mos.) *Institution:* NORDITA (Nordic Institute for Theoretical Physics), Stockholm, Sweden.
- 2010, 1 mo. *Position:* **Visiting Researcher**
Institution: Center for Turbulence Research, Stanford University, Stanford, CA, US.
- 2008, 1 mo. *Position:* **Visiting Researcher**
Institution: Kavli Institute for Theoretical Physics, University of California, Santa Barbara, CA, US.
- 2002, 3 mos. *Position:* **Fellow of the 2002 WHOI Geophysical Fluid Dynamics Program**
Institution: Woods Hole Oceanographic Institution, Woods Hole, Massachusetts, US.

□ 5.3. Invited Encyclopedia Article

2015 Busse, F.H., SIMITEV, R. (2015). 10.07 - Planetary dynamos. In *“Treatise on Geophysics (Second Edition)”*, G. Schubert, (ed.), Elsevier, Vol. 10, *“Planets and Moons”*, T. Spohn (ed.), pp. 239-254, DOI:10.1016/B978-0-444-53802-4.00172-X.

□ 5.4. Invited and Externally-Funded Seminars and Conference Presentations

Nottingham (2016-11-02), Glasgow (2017-06-07), London (2017-11-16), Glasgow (2018-01-2018), St Andrews (2018-03-27, BAMC) St Andrews (2018-03-28, BAMC) Glasgow (2018-06-12, ECCM-ECFD-2018) Bath (2019-04-24, BAMC), Bath (2019-04-25, BAMC), Bath (2019-04-26, BAMC), London (2019-05-09, UK-SEDI), Dundee (2015-11-02), NASA Ames, US (2015-04-16), Cambridge (2014-11-17), Cambridge (2014-09-12), Edinburgh (2014-05-15), Exeter (2013-11-18), Stockholm, Sweden (2013-04-29), London (2013-04-16), Vienna, Austria (2013-04-08, EGU2013-14187), San Francisco, US (2012-12-07), Stanford, US (2012-08-03), Stanford, US (2012-04-27), Leeds (2012-01-26), Liverpool (2011-12-07), East Kilbride (2011-10-28), Stockholm, Sweden (2011-08-03), Oxford (2011-07-09), Exeter (2011-06-02), Imperial College London (2010-12-08), Stanford, US (2010-07-19), Grenoble, France (2010-04-01), Stirling (2009-11-24), Cambridge (2009-07-22), Zürich, Switzerland (2009-07-11), Santa Barbara, US (2008-07-17), Santa Barbara, US (2008-07-11), Newcastle, (2007-10-26), Liverpool (2005-09-28), Leeds (2005-05-13), Ilmenau, Germany (2002-09-23), Woods Hole, Massachusetts, US (2002-08-19).

□ 5.5. Editorial Position

Since 2011 Member of the Editorial Board of [ISRN Thermodynamics](#), ISSN: 2356-7872.

□ 5.6. Memberships

- Since 2017* Fellow of the [Institute of Mathematics and its Applications \(FIMA\)](#).
- Since 2016* Member of the EPSRC Associate Peer Review College.
- Since 2015* Member and **Co-I** of [SoftMech – EPSRC Centre for Multiscale Soft Tissue Mechanics](#).
- Since 2014* Executive Committee Member of the [Centre for Mathematics Applied to the Life Sciences](#).
- Since 2013* Member of the [European Geosciences Union](#).
- Since 2012* Member of several informal but very active int'l scientific networks: (a) [SEDI](#) (Study of the Earth's Deep Interior), (b) [European GdR Dynamo](#) network, (c) [UK Solar Physics](#) network.
- Since 2011* Member of the [Space Glasgow Research Cluster](#).
- Since 2009* Fellow of the [Higher Education Academy](#).
- Since 2006* Member of the [UK MHD Consortium](#).
- Since 2006* Member of the [Edinburgh Mathematical Society](#).
- Since 2006* Member of the [Centre for Mathematics Applied to the Life Sciences](#).

□ 5.7. Conference Organization

- 2016* Chair of the Organizing Committee, *2016 UK National Conference on Geophysical, Astrophysical and Industrial Magnetohydrodynamics*, School of Mathematics and Statistics, University of Glasgow, 12 – 13 May 2016, 70 participants expected.
- 2013* Chair of the Organizing Committee, *2013 UK National Conference on Geophysical, Astrophysical and Industrial Magnetohydrodynamics*, School of Mathematics and Statistics, University of Glasgow, 23 – 24 May 2013, 62 participants.
- 2010* Member of the Organising Committee *Numerical Simulation and Fluid Mechanics of Biological and Geophysical flows (NumBIG)*, Grenoble, 31 Mar – 2 April, 2010, 35 participants.

■ 6. Research & Related Administration

□ 6.1. Research Interests and Contributions

- Fields:* Fluid Dynamics, Magnetohydrodynamics, Excitable Systems, Mathematical Biology.
- Keywords:* convection, dynamo theory, geo-, planetary, solar and stellar magnetism, turbulence, pattern formation, reaction-diffusion differential equations, excitable media, cardiac electrophysiology, asymptotic/perturbation methods, numerical methods.

□ 6.2. Publication List

Summary: A career record of 55 publications, of which 41 peer-reviewed articles, in particular 31 in high-profile scientific journals and 10 articles in peer-reviewed collections. Published 25 publications in the last 6 years.

Metrics: Career citations: 533, H-index: 12 (Google Scholar on 2021-09-12).

Full details: *Appendix A:* A full publication list with links to electronic versions of articles is appended as a separate document (Appendix A).

ORCID ID: orcid.org/0000-0002-2207-5789

CrossRef: search.crossref.org/?q=Simitev

Selected: Three high-profile recent publications –

- [7] Bezekci, B., Idris, I., SIMITEV, R., and Biktashev V.N. (2015). Semi-analytical approach to criteria for ignition of excitation waves, *Phys. Rev. E*, **92**, 042917. DOI: 10.1103/PhysRevE.92.042917.
- [6] SIMITEV, R., Kosovichev, A.G. and Busse, F.H. (2015). Dynamo effects near the transition from solar to anti-solar differential rotation, *Astrophys. J.*, **810(1):80**. DOI: 10.1088/0004-637X/810/1/80.

- [5] Busse, F.H., SIMITEV, R. (2014). Quasi-geostrophic approximation of anelastic convection. *J. Fluid Mech.*, 751, pp. 216–227. DOI: 10.1017/jfm.2014.

Selected: Four “old” but important publications –

- [4] SIMITEV, R. (2011). Double-diffusive convection in a rotating cylindrical annulus with conical caps. *Phys. Earth Planet. Inter.*, 186(3-4), pp. 183-190, DOI: 10.1016/j.pepi.2011.04.007.
- [3] SIMITEV, R., Busse, F.H. (2009). Bistability and hysteresis of dipolar dynamos generated by turbulent convection in rotating spherical shells. *EPL (Europhys. Lett.)*, 85, 19001. DOI: 10.1209/0295-5075/85/19001.
- [2] Biktashev, V.N., Suckley, R., Elkin, Y.E., SIMITEV, R.. (2008). Asymptotic analysis and analytical solutions of a model of cardiac excitation. *Bull. Math. Biol.*, 70(2), pp. 517-554. DOI: 10.1007/s11538-007-9267-0.
- [1] SIMITEV, R., Busse, F.H. (2005). Prandtl number dependence of convection driven dynamos in rotating spherical fluid shells. *J. Fluid Mech.*, 532, pp. 365–388. DOI: 10.1017/S0022112005004398.

□ 6.3. Research Seminars and Presentations

Since 1999 Delivered over 60 presentations. See section on Esteem above and appended List of Publications in Appendix A.

□ 6.4. Other Research Outputs

- [Code:2] SIMITEV, R., Busse F.H., Silva L. (2016) “aDRS – anelastic Dynamo In Rotation Spheres”, numerical code, Fortran, 15,000 lines, (in preparation for deposit on GitHub).
- [Code:1] SIMITEV, R. (2013) “tcELO – Egensolver for the Linear Onset of Thermo-Compositional Convection”, numerical code, Fortran, 4,000 lines.

□ 6.5. Supervision of Post-Doctoral Research Associates

- [11] Dr Hao Gao, *Centre for Multiscale Soft Tissue Mechanics with applications to heart and cancer - Workmodule 5*, funded by the EPSRC since 2016. (Supervising as CI)
- [10] Dr Luis Silva, *Two-layer thermo-compositional dynamo models of the geomagnetic field*, funded by the Leverhulme Trust, UK, since 2013. (Supervising as PI)
- [9] Dr Wenguang Li, *Feasibility study on the predictive modelling of extruder design*, KTP funded by the EPSRC and Devro LTD. 2011 – 2012. (Supervising as CI)

□ 6.6. Supervision of PhD & MSc Research Students

- [8] Muhamad Hifzhudin Noor Aziz, *Efficient asymptotic-numerical methods for cardiac electrophysiology*, University of Glasgow, (Principal supervisor – responsibility 100%. Pending financial support.)
- [7] Stylianos Vasileiou, *Feedback between mechanical contraction and electrical excitation in cardiac cells*, University of Glasgow, 2015 – 2016. (Principal supervisor – responsibility 100%. MSc Student.)
- [6] Peter Mortensen, *Remodelling of the mechanical and electrophysiological properties of the left ventricle after myocardial infarction*, funded by the EPSRC, starting Sept 2016. (Second supervisor – responsibility 40%.)
- [5] James Quinn, *Magnetic reconnection*, funded by the EPSRC, starting Sept 2016. (Second supervisor – responsibility 40%.)
- [4] Ameneh Asgari-Targhi, *Nonlinear dynamics and control of the electrophysiology of atrial fibrillation*, funded by the University of Glasgow, started Jan 2013. (Principal supervisor – responsibility 70%.)
- [3] Muhamad Hifzhudin Noor Aziz, *Models of alternans in excitable systems*, University of Glasgow, 2014–2015. (Principal supervisor – responsibility 100%. MSc Student.)

- [2] Andrew Allan, *Electro-mechanical delay in rabbit hearts*, funded by the British Heart Foundation, 2011-2015. (Second supervisor – responsibility 20%.)
- [1] Dr Roberto Pintus (Erasmus PhD exchange from University of Cagliari, Italy), *Inductive magnetohydrodynamic generator*, 2009-2010. (Second supervisor – responsibility 30%.)

■ 7. Research Grants

27 grants: Total number of grants awarded.
41 grants: Total number of grants submitted (including not-awarded).
£ 688,129: Total value of funding generated (personal contribution only; including pending).
£ 554,579: Total value of funding generated (personal contribution only; excluding pending).
Personnel: 8 PDRA's and 8 PhD students supported by grant income.
Major grants: Most significant grants out of 27 awards –

- [6] *Centre for Multiscale Soft Tissue Mechanics with applications to heart and cancer*, EPSRC, R Ogden (PI), **RD SIMITEV** (CoI at 6%) et al., 2016–2020, £ 2,498,870.
- [5 PI] *Two-layer thermo-compositional dynamo models of the geomagnetic field*, Research Project Grant, The Leverhulme Trust, **RD SIMITEV** (PI at 100%), 2013–2016, £ 147,659.
- [4 PI] *Nonlinear dynamics and control of the electrophysiology of atrial fibrillation*, Lord Kelvin and Adam Smith Scholarship, University of Glasgow, **RD SIMITEV** (PI at 50%), A Workman, A Rankin, 2013–2017, £ 131,360.
- [3] *Using dynamo models and data assimilation methods for forecasting properties of solar cycles*, Research Grant, NASA, FH Busse (PI), **RD SIMITEV** et al. (CoI at 25%), 2009–2015, £ 449,119.
- [2] *Feasibility study on the predictive modelling of extruder design and behaviour upon fibre orientation in an extruded collagen tube*, Knowledge Transfer Partnerships (KTP), EPSRC and Devro Ltd, X Luo (PI), **RD SIMITEV** (CoI at 50%), 2011–2012, £ 40,000.
- [1 PI] *Geodynamo models driven by thermo-compositional convection*, Research Grant, The Royal Society, **RD SIMITEV** et al. (PI at 100%), 2010–2011, £ 12,715.

■ 8. Teaching & Related Administration

I am involved in the full range of academic teaching and administration duties.

□ 8.1. External Examiner Position

Since 2014 *Position:* **External Examiner of Applied Mathematics Honours & MSci Programmes**
Institution: School of Mathematics & Statistics, University of St Andrews, UK.

□ 8.2. Class and Level Head

2013 Head of Level 1 Mathematics, School of Mathematics & Statistics, University of Glasgow, approximately 500 students.

Since 2006 Head of Class for 8 courses, School of Mathematics & Statistics, University of Glasgow – see subsection on Lecturing below.

□ 8.3. Supervision of MSci projects (40 credits)

- [3] James Quinn, *Thermo-compositional models of the geodynamo*, School of Mathematics & Statistics, University of Glasgow, 2015–2016.
- [2] David Russell, *Analytical and numerical models of thermal convection with applications to planets and stars*, School of Mathematics & Statistics, University of Glasgow, 2014–2015.

[1] Craig Newsum, *Mean-field dynamo models of the solar magnetic field and solar cycle*, School of Mathematics & Statistics, University of Glasgow, 2013–2014.

□ 8.4. Supervision of Honours Projects

Since 2006 Supervised 21 Senior-Honours projects (20 credits), School of Mathematics & Statistics, University of Glasgow, since 2006.

Since 2006 Supervised over 60 Junior-Honours projects (10 credits), School of Mathematics & Statistics, University of Glasgow, since 2006.

□ 8.5. Lecturing

Track record at the School of Mathematics & Statistics, University of Glasgow follows.

Since 2014 *Mathematics 2A*, Level 2 – Class Head, 450 students, 20 credits.

Since 2014 *Numerical Methods*, Level 4 and 5 – Class Head, 20 credits.

2013 – 2014 *Mathematics 1X*, Level 1 – Class Head, 120 students, 20 credits.

2013 *Mathematics 1S*, Level 1 – Class Head, 450 students, 20 credits.

2009 – 2012 *Mathematical Methods*, Level 3 – Class Head, 20 credits.

2011 *Numerical Solution of PDEs*, Level 4 – Class Head, 15 credits.

2011 *Writing & Presenting Mathematics*, Level 3 – 10 credits.

2009 – 2011 *Mathematics 1Y*, Level 1 – Class Head in 2011, 120 students, 20 credits.

Since 2008 *SMSTC Cardiac modelling* – PhD course.

2006 – 2011 *Mathematics 1R*, Level 1 – 20 credits.

2006 – 2009 *Numerical Solution of PDEs*, Level 4 – Class Head, 15 credits.

□ 8.6. Tutorial Provision

Since 2006 Tutorials for all of the above courses as well as for courses taught by other lecturers at the School of Mathematics & Statistics, University of Glasgow, since 2006.

2000–2006 Tutorials and occasional substitute lectures in *Mathematical Methods* (2006) *Dynamic Modelling* (2005), *Computational Physics* (2003-2004), *Thermodynamics and Statistical Physics* (2003), *Quantum Mechanics I, II* (2002,2003), *Theory of Relativity* (2002) at the University of Liverpool and the University of Bayreuth, Germany.

PROFESSOR RADOSTIN DIMOV SIMITEV

DipHE MSc **Dr. rer. nat. (PhD)** PGCert, CMath FIMA FHEA

Publication List — Glasgow, 2021-09-12

(Appendix A)

1. Articles in scientific journals

- [73] Candelaresi, S., Hornig, G., MacTaggart, D., & SIMITEV, R. D. (2021). On self and mutual winding helicity. *Communications in Nonlinear Science and Numerical Simulation*, 103, 106015. doi.org/10.1016/j.cnsns.2021.106015
- [72] Costa, A. D. S., Mortensen, P., Hortigon-Vinagre, M. P., van der Heyden, M. A. G., Burton, F. L., Gao, H., SIMITEV, R. D., & Smith, G. L. (2021). Electrophysiology of hiPSC-Cardiomyocytes Co-Cultured with HEK Cells Expressing the Inward Rectifier Channel. *International Journal of Molecular Sciences*, 22(12), 6621. doi.org/10.3390/ijms22126621
- [71] Mortensen, P., Gao, H., Smith, G., & SIMITEV, R. D. (2021b). Addendum: Action potential propagation and block in a model of atrial tissue with myocyte–fibroblast coupling. *Mathematical Medicine and Biology: A Journal of the IMA*, 38(3), 292–298. doi.org/10.1093/imammb/dqab005
- [70] Quinn, J., MacTaggart, D., & SIMITEV, R. D. (2021). Kelvin-Helmholtz instability and collapse of a twisted magnetic null point with anisotropic viscosity. *Astronomy & Astrophysics*, 650, A143. doi.org/10.1051/0004-6361/202140460
- [69] SIMITEV, R. D. & Busse, F. H. (2021). Onset of Inertial Magnetoconvection in Rotating Fluid Spheres. *Fluids*, 6(1), 41. doi.org/10.3390/fluids6010041
- [68] Mortensen, P., Gao, H., Smith, G., & SIMITEV, R. D. (2021a). Action potential propagation and block in a model of atrial tissue with myocyte–fibroblast coupling. *Mathematical Medicine and Biology: A Journal of the IMA*, 38(1), 106–131. doi.org/10.1093/imammb/dqaa014
- [67] Mather, J. F. & SIMITEV, R. D. (2021). Regimes of thermo-compositional convection and related dynamos in rotating spherical shells. *Geophysical & Astrophysical Fluid Dynamics*, 115(1), 61–84. doi.org/10.1080/03091929.2020.1762875
- [66] Silva, L., Gupta, P., MacTaggart, D., & SIMITEV, R. D. (2020). Effects of Shell Thickness on Cross-Helicity Generation in Convection-Driven Spherical Dynamos. *Fluids*, 5(4), 245. doi.org/10.3390/fluids5040245
- [65] Quinn, J., MacTaggart, D., & SIMITEV, R. D. (2020). The effect of anisotropic viscosity on the nonlinear MHD kink instability. *Communications in Nonlinear Science and Numerical Simulation*, 83, 105131. doi.org/10.1016/j.cnsns.2019.105131
- [64] Silva, L. A., Mather, J. F., & SIMITEV, R. D. (2019). The onset of thermo-compositional convection in rotating spherical shells. *Geophysical and Astrophysical Fluid Dynamics*, 113(4), 377–404. doi.org/10.1080/03091929.2019.1640875

- [63] SIMITEV, R. D. & Busse, F. H. (2018). Flows and dynamos in a model of stellar radiative zones. *Journal of Plasma Physics*, 84(3), 735840308.
doi.org/10.1017/s0022377818000612
- [62] SIMITEV, R. D. & Busse, F. H. (2017). Baroclinically-driven flows and dynamo action in rotating spherical fluid shells. *Geophysical and Astrophysical Fluid Dynamics*, 111(5), 369–379.
doi.org/10.1080/03091929.2017.1361945
- [61] Matsui, H., Heien, E., Aubert, J., Aurnou, J. M., Avery, M., Brown, B., Buffett, B. A., Busse, F., Christensen, U. R., Davies, C. J., Featherstone, N., Gastine, T., Glatzmaier, G. A., Gubbins, D., Guermond, J.-L., Hayashi, Y.-Y., Hollerbach, R., Hwang, L. J., Jackson, A., Jones, C. A., Jiang, W., Kellogg, L. H., Kuang, W., Landeau, M., Marti, P. H., Olson, P., Ribeiro, A., Sasaki, Y., Schaeffer, N., SIMITEV, R. D., Sheyko, A., Silva, L., Stanley, S., Takahashi, F., Ichi Takehiro, S., Wicht, J., & Willis, A. P. (2016). Performance benchmarks for a next generation numerical dynamo model. *Geochemistry, Geophysics, Geosystems*, 17(5), 1586–1607.
doi.org/10.1002/2015GC006159
- [60] Bezekci, B., Idris, I., SIMITEV, R. D., & Biktashev, V. N. (2015). Semianalytical approach to criteria for ignition of excitation waves. *Physical Review E*, 92, 042917.
doi.org/10.1103/PhysRevE.92.042917
- [59] SIMITEV, R. D., Kosovichev, A. G., & Busse, F. H. (2015). Dynamo effects near the transition from solar to anti-solar differential rotation. *Astrophysical Journal*, 810(1), 80.
doi.org/10.1088/0004-637x/810/1/80
- [58] MacTaggart, D., Guglielmino, S. L., Haynes, A. L., SIMITEV, R. D., & Zuccarello, F. (2015). The magnetic structure of surges in small-scale emerging flux regions. *Astronomy & Astrophysics*, 576, A4.
doi.org/10.1051/0004-6361/201424646
- [57] Busse, F. H. & SIMITEV, R. D. (2014). Quasi-geostrophic approximation of anelastic convection. *Journal of Fluid Mechanics*, 751, 216–227.
doi.org/10.1017/jfm.2014.293
- [56] Marti, P., Schaeffer, N., Hollerbach, R., Cébron, D., Nore, C., Luddens, F., Guermond, J.-L., Aubert, J., Takehiro, S., Sasaki, Y., Hayashi, Y.-Y., SIMITEV, R. D., Busse, F., Vantieghem, S., & Jackson, A. (2014). Full sphere hydrodynamic and dynamo benchmarks. *Geophysical Journal International*, 197(1), 119–134.
doi.org/10.1093/gji/ggt518
- [55] Jackson, A., Sheyko, A., Marti, P., Tilgner, A., Cébron, D., Vantieghem, S., SIMITEV, R. D., Busse, F., Zhan, X., Schubert, G., Takehiro, S., Sasaki, Y., Hayashi, Y.-Y., Ribeiro, A., Nore, C., & Guermond, J.-L. (2013). A spherical shell numerical dynamo benchmark with pseudo-vacuum magnetic boundary conditions. *Geophysical Journal International*, 196(2), 712–723.
doi.org/10.1093/gji/ggt425
- [54] MacTaggart, D., Elsheikh, A., McLaughlin, J. A., & SIMITEV, R. D. (2013). Non-symmetric magnetohydrostatic equilibria: a multigrid approach. *Astronomy & Astrophysics*, 556, A40.
doi.org/10.1051/0004-6361/201220458
- [53] SIMITEV, R. D. & Busse, F. H. (2012b). Bistable attractors in a model of convection-driven spherical dynamos. *Physica Scripta*, 86(1), 018409.
doi.org/10.1088/0031-8949/86/01/018409
- [52] SIMITEV, R. D. & Busse, F. H. (2012c). Solar cycle properties described by simple convection-driven dynamos. *Physica Scripta*, 86(1), 018407.
doi.org/10.1088/0031-8949/86/01/018407
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DR RADOSTIN DIMOV SIMITEV

DipHE MSc **PhD** PGCert, FHEA

List of Research Grant Awards — Glasgow, 2021-09-12

(Appendix CV-B)

1. Submitted Funding Applications Under Review

- [G:33 PI] *Project title:* Computing resources for Consolidated Grant: Dynamos in the Solar System
Grant holders: Radostin Simitev (PI), David MacTaggart (CI), Robert Teed (PI)
Awarding body: STFC
Funding scheme: DiRAC Thematic Project
Duration of award: 2021 – 2024
Value of award: 4.5 M-CPUh
RDS ownership: 35%
- [G:32 PI] *Project title:* Observationally-constrained 3D convective spherical models of the Solar dynamo
Grant holders: Radostin Simitev (PI)
Awarding body: The Royal Society of Edinburgh
Funding scheme: RSE Research Re-Boot (Covid-19 Impact) Research Grants
Duration of award: June to December 2021
Value of award: 25,000 £
RDS ownership: 100%

2. Awarded Grants

- [G:31 PI] *Project title:* Observationally-constrained 3D convective spherical models of the Solar dynamo - HPC17K1Q9P
Grant holders: Radostin Simitev (PI)
Awarding body: HPC-Europa
Funding scheme: HPC-Europa3 Transnational Access application
Duration of award: 2020, 1 month
Personnel: -
Value of award: 15,000 £
RDS ownership: 100%
- [G:30] *Project title:* SoftMech^{SET} - The SoftMech Statistical Emulation and Translation Hub
Grant holders: Dirk Husmeier (PI), Radostin Simitev (CI) et al.
Awarding body: EPSRC
Funding scheme: Mathematical Sciences-Healthcare Technologies Hubs 2019
Duration of award: 2020 – 2024
Personnel: 4 PDRAs, 1 IT staff, 1 admin staff
Value of award: £ 1,501,773
RDS ownership: 6%
- [G:29] *Project title:* EPSRC Centre for Multiscale soft tissue mechanics with MIT and POLIMI (SoftMech-MP)
Grant holders: XY Luo (PI), **RD SIMITEV**, (CI) R Ogden NA Hill, D Husmeier, P Stewart, C Berry, G Smith, M Olson, H Yin, R Insall, M Chaplain, S McDougall, S McGynty, R Penta
Awarding body: EPSRC
Funding scheme: International centre-to-centre research collaborations
Duration of award: 2019 – 2023
Personnel: 3 PDRAs and 11 PhD students supported.
Value of award: £ 1,911,296
RDS ownership: 7%
- [G:28 PI] *Project title:* Efficient asymptotic-numerical methods for cardiac electrophysiology
Grant holders: MH NoorAziz (student), **RD SIMITEV**
Awarding body: Ministry of Higher Education, Malaysia
Funding scheme: Academic Training Scheme, PhD Scholarship Grant for MH NoorAziz

- Duration of award:* 2016 – 2020
Personnel: 1 PhD student
Value of award: £ 93,000
RDS ownership: 100% as Supervisor
- [G:27]** *Project title:* Centre for Multiscale Soft Tissue Mechanics with applications to heart and cancer
Grant holders: R Ogden (PI), X Luo, N Hill, D Husmeier, **RD SIMITEV**, P Stewart, C Berry, G Smith, M Olson, H Yin, R Insall, M Chaplain, S McDougall, P Watton
Awarding body: Engineering and Physical Sciences Research Council (EPSRC)
Funding scheme: Centres for Mathematical Sciences in Healthcare
Duration of award: 2016 – 2019
Personnel: 6 PDRA's and 5 PhD students supported,
Value of award: £ 2,498,870
RDS ownership: 6.5% as a Co-Investigator
- [G:26 PI]** *Project title:* Two-layer thermo-compositional dynamo models of the geomagnetic field
Grant holders: **RD SIMITEV**
Awarding body: The Leverhulme Trust
Funding scheme: Research Project Grant
Duration of award: 2013 – 2018
Personnel: 1 PDRA supported
Value of award: £ 147,661
RDS ownership: 100%
- [G:25 PI]** *Project title:* Nonlinear dynamics and control of the electrophysiology of atrial fibrillation
Grant holders: **RD SIMITEV**, A Workman, A Rankin
Awarding body: University of Glasgow
Funding scheme: The Lord Kelvin and Adam Smith Scholarship
Duration of award: 2013 – 2017
Personnel: 1 PhD student supported
Value of award: £ 93,000
RDS ownership: 50% as the Principal Investigator
- [G:24 PI]** *Project title:* 2016 UK MHD National Conference on Geophysical, Astrophysical and Industrial Magnetohydrodynamics
Grant holders: **RD SIMITEV**
Awarding body: Science and Technology Facilities Council (STFC), Edinburgh Mathematical Society, Glasgow Mathematical Journal Research Fund
Funding scheme: Conference Schemes
Duration of award: 2016
Value of award: £ 4,600
RDS ownership: 100%
- [G:23]** *Project title:* The evolution of magnetic helicity in the dynamic solar atmosphere
Grant holders: D MacTaggart (PI), **RD SIMITEV**, A Hood, K Meyer
Awarding body: The Carnegie Trust
Funding scheme: Research Incentive Grant
Duration of award: Jan – Dec, 2016
Value of award: £ 4,900
RDS ownership: 50 % as a Co-Investigator
- [G:22]** *Project title:* Using dynamo models and data assimilation methods for modelling and forecasting properties of solar cycles
Grant holders: F Busse(PI), A Kosovichev, **RD SIMITEV**, A Brandenburg
Awarding body: NASA – National Aeronautics and Space Administration, US
Funding scheme: Research Grant – “Living With a Star” call
Duration of award: 2009 – 2015
Personnel: 2 PDRA's supported
Value of award: £ 449,119 (\$ 657,100)
RDS ownership: 20 % as a “Collaborator”
- [G:21]** *Project title:* Solar Dynamo Simulations
Grant holders: N Mansour (PI), **RD SIMITEV**, G Guerrero

- Awarding body:* NASA Science Mission Directorate
Funding scheme: Computing resources grant
Duration of award: 2013 – 2015
Value of award: £ 29,500 (= 100,000 NASA Standard Billing Units * 0.38 USD)
RDS ownership: 40% as a “Collaborator”
- [G:20 PI]** *Project title:* Transition from solar to antisolar rotation
Grant holders: **RD SIMITEV**
Awarding body: University of California, Los Angeles (UCLA)
Funding scheme: Travel and subsistence grant
Duration of award: May 2015
Value of award: \$ 4,000 = £ 2,800
RDS ownership: 100%
- [G:19]** *Project title:* Magnetic eruptions in the solar atmosphere
Grant holders: D MacTaggart (PI), **RD SIMITEV**, A Haynes
Awarding body: The Carnegie Trust
Funding scheme: Research Grant
Duration of award: Feb – Aug, 2014
Value of award: £ 1,000
RDS ownership: 33% as a Co-Investigator
- [G:18 PI]** *Project title:* Efficient asymptotic-numerical methods for cardiac electrophysiology
Grant holders: **RD SIMITEV**
Awarding body: Engineering and Physical Sciences Research Council (EPSRC) via the POEMS network
Funding scheme: Visitor travel and sustenance grant
Duration of award: July 2014
Personnel: 1 visitor (H Mahato)
Value of award: £ 700
RDS ownership: 100%
- [G:17 PI]** *Project title:* 2013 UK MHD National Conference on Geophysical, Astrophysical and Industrial Magnetohydrodynamics
Grant holders: **RD SIMITEV**
Awarding body: Science and Technology Facilities Council (STFC), London Mathematical Society, Edinburgh Mathematical Society, Glasgow Mathematical Journal Research Fund
Funding scheme: Conference Schemes
Duration of award: 2013
Value of award: £ 7,000
RDS ownership: 100%
- [G:16 PI]** *Project title:* Numerical simulations in Magnetohydrodynamics and Electrocardiology
Grant holders: **RD SIMITEV**
Awarding body: University of Glasgow, College of Science and Engineering
Funding scheme: Small equipment grant
Duration of award: 2013
Value of award: £ 10,222
RDS ownership: 100%
- [G:15 PI]** *Project title:* Differential Rotation and Magnetism across the HR Diagram
Grant holders: **RD SIMITEV**
Awarding body: The Nordic Institute for Theoretical Physics (NORDITA) Sweden
Funding scheme: Workshop program participation grant
Duration of award: Apr 2013
Value of award: £ 1,800
RDS ownership: 100%
- [G:14 PI]** *Project title:* Self-Consistent models of the Geo- and the Solar dynamos
Grant holders: **RD SIMITEV**
Awarding body: University of Glasgow, College of Science and Engineering
Funding scheme: Research Support Fund
Duration of award: Jan – June 2012

- Value of award: £ 4,802
RDS ownership: 100%
- [G:13 PI] *Project title:* Geodynamo models driven by thermo-compositional convection
Grant holders: **RD SIMITEV**
Awarding body: The Royal Society
Funding scheme: Research Grant
Duration of award: 2011 – 2012
Value of award: £ 12,715
RDS ownership: 100%
- [G:12] *Project title:* Physical modelling of vocal folds oscillations during normal and pathological speech
Grant holders: X Luo (PI), **RD SIMITEV**, N Hill, A Van Hirtum, X Pelorson
Awarding body: The Royal Society
Funding scheme: International Joint Project Grant
Duration of award: 2011 – 2012
Value of award: £ 12,000
RDS ownership: 20% as a Co-Investigator
- [G:11] *Project title:* Feasibility study on the predictive modelling of extruder design and behaviour upon fibre orientation in an extruded collagen tube
Grant holders: X Luo (PI), **RD SIMITEV**
Awarding body: Engineering and Physical Sciences Research Council (EPSRC) & Devro Ltd.
Funding scheme: Knowledge Transfer Partnerships (KTP)
Duration of award: Nov 2011 – Apr 2012
Personnel: 1 PDRA supported
Value of award: £ 40,000
RDS ownership: 50 % as a Co-Investigator
- [G:10 PI] *Project title:* Dynamo, Dynamical Systems and Topology
Grant holders: **RD SIMITEV**
Awarding body: The Nordic Institute for Theoretical Physics (NORDITA) Sweden
Funding scheme: Workshop program participation grant
Duration of award: July – Aug 2011
Value of award: £ 2,230
RDS ownership: 100%
- [G:9 PI] *Project title:* Problems of Astrophysical Turbulent Convection
Grant holders: **RD SIMITEV**
Awarding body: Stanford University, Center for Turbulence Research
Funding scheme: Workshop program participation grant
Duration of award: Aug 2010
Value of award: £ 3,000
RDS ownership: 100%
- [G:8 PI] *Project title:* Double-buoyancy convection in rotating axisymmetric fluid systems
Grant holders: **RD SIMITEV**
Awarding body: Edinburgh Mathematical Society
Funding scheme: Visitor travel and sustenance grant
Duration of award: May 2010
Personnel: 1 visitor (FH Busse)
Value of award: £ 500
RDS ownership: 100 %
- [G:7 PI] *Project title:* Magneto-Inertial Convection in Rotating Spheres
Grant holders: **RD SIMITEV**
Awarding body: Edinburgh Mathematical Society
Funding scheme: Visitor travel and sustenance grant
Duration of award: May 2009
Personnel: 1 visitor (FH Busse)
Value of award: £ 800
RDS ownership: 100 %

- [G:6 PI] *Project title:* The Cardiac Physiome
Grant holders: **RD SIMITEV**
Awarding body: The Isaac Newton Institute for Mathematical Sciences, Cambridge
Funding scheme: Workshop program participation grant
Duration of award: July 2009
Value of award: £ 800
RDS ownership: 100%
- [G:5 PI] *Project title:* Magnetic Field Generation in Experiments, Geophysics and Astrophysics
Grant holders: **RD SIMITEV**
Awarding body: The Royal Society
Funding scheme: Conference Grant
Duration of award: Aug 2008
Value of award: £ 1,100
RDS ownership: 100%
- [G:4 PI] *Project title:* Dynamo Theory
Grant holders: **RD SIMITEV**
Awarding body: The Kavli Institute for Theoretical Physics, Unibersity of California, Santa Barbara (UCSB)
Funding scheme: Workshop program participation grant
Duration of award: Aug 2008
Value of award: £ GBP 850
RDS ownership: 100%
- [G:3 PI] *Project title:* Modelling and inversion of a complex production system of acoustical signals: application to speech and pathologies
Grant holders: **RD SIMITEV (PI), A Van Hirtum**
Awarding body: British Council, Paris
Funding scheme: Franco-British Partnership Grant,
Duration of award: 2008 – 2010
Value of award: £ 4,800
RDS ownership: 50 %
- [G:2 PI] *Project title:* Computers in Cardiology
Grant holders: **RD SIMITEV**
Awarding body: The Royal Society
Funding scheme: Conference Grant
Duration of award: Aug 2007
Value of award: £ 960
RDS ownership: 100%
- [G:1 PI] *Project title:* Large-scale double-diffusive convection in rotating annuli and spherical shells
Grant holders: **RD SIMITEV**
Awarding body: The Royal Society
Funding scheme: International Outgoing Travel Grant
Duration of award: May 2007
Value of award: £ 930
RDS ownership: 100%