CURRICULUM VITAE

Dr. rer. nat. habil. Florin Adrian Radu

General Information

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Education

2015 **Research Leadership Program** at University of Bergen, Norway (2 years).

2013 **Habilitation in Mathematics** at University Erlangen-Nürnberg, Germany.
Thesis: Convergent mass conservative schemes for reactive solute transport and flow in variably saturated porous media.

2004 **PhD Degree in Mathematics** at University Erlangen-Nürnberg, Germany.
Thesis: Mixed finite element discretization of Richards' equation: error analysis and application to realistic infiltration problems.
Advisers: Prof. P. Knabner, Prof. C. Wieners, Mark: **magna cum laude**.

1996 **Master of Science in Mathematics**, University of Bucharest, Romania.

1995 **License Degree in Mathematics**, University of Bucharest, Romania.

Awards

1988 Award of the Romanian Mathematical Society, qualification in the Enlarged Romanian National Team to participate at IMO Australia 1988.

1987 Award of the Romanian Mathematical Society.

1985 – 1989 Four times first place at mathematical Olympiads in Constanţa, participation at national finals in Arad, Pitesti, Cluj and Suceava.

1984 First place at Olympiad of Physics in Constanţa, participation at national final in Craiova.

Professional activities

Current affiliation

2015 – **Professor** at Department of Mathematics, University of Bergen (UoB), Norway (permanent position).

Past professional experience

2011 – 2015 **Associate Professor** at UoB, Norway (permanent position).

2011 – 2011 **Professor (W3)** at University Erlangen-Nürnberg, chair Biomathematics (Acting Professor for one semester).

2010 – 2011 **Research assistant** at UFZ-Helmholtz Center for Environmental Research (UFZ), Leipzig, Germany.

2007 – 2010 **Research assistant** at University of Jena, Germany and UFZ.

2006 – 2007 **Research assistant** at Max-Planck-Institute for Mathematics in the Sciences, Leipzig, Germany.

1997 – 2006 **Research assistant** at University Erlangen-Nürnberg, Germany.

1996 – 1997 **Teacher of mathematics** at the high school Decebal, Constanţa, Romania.

Professional service

- Organizer of the Oberwolfach Workshop 1835, Reactive Flows in Deformable, Complex Media, 26.08-01.09.2018 (together with B. Wohlmuth, M. Gerritsen and I.S. Pop).
- Chair of the organizing committee of ENUMATH 2017, 25-29.09.2017, Voss, Norway (330 participants).
- Member in the organizing committee of NUPUS international conference, 30.09-02.10.2013, Bergen (120 particpants).
- Co-organizer of international workshops in Voss 2016, Zaragoza 2015, Geilo 2014 and Finse 2012.
- Reviewer for Swiss National Foundation (SNSF), for Netherlands Organization for Scientific Research (NWO) and for National Commision for Scientific and Technological Research Chile (CONICYT).
- Member in the Expert Panel W&T1 (Mathematical Sciences) for Research Foundation Flanders (FWO).FWO 2019-2022.
- Reviewer for more than 20 international journals.
- Opponent (Reviewer/Member of the examination committee) at the PhD defences of 6 students (S. Hilden, NTNU, Trondheim, Norway; U. Köcher and K. Schwegler, Helmut-Schmidt University Hamburg, Germany; K. Kumar, TU Eindhoven, The Netherlands; F. Brunner and F. Frank, University Erlangen-Nuremberg, Germany).

Professional membership

- Society for Industrial and Applied Mathematics (SIAM).
- International Society for Porous Media (InterPore).

Invited talks/sessions at international conferences

- Invited speaker at 10th InterPore conference in New Orleans, 14-17.05.2018.
- Invited plenary talk at the Lorentz Center workshop "The Computational Mathematics Aspects of Porous Media, and Fluid Flow" in Leiden, 22-25.05.2018.
- Invited minisymposium (MS) talk at "SIAM Conference on Computational Geosciences" in 2017, 2015, 2013 and 2009.
- Invited special session at "ACOMEN", Gent, Belgium in 2017 and 2014.
- Invited plenary talk at 10th and 11th "Workshop on mathematical modeling of environmental and life sciences problems", Constanta, Romania in 2016 and 2014.
- Invited special session at "ALGORITMY", Podbanske, Slovacia in 2016 and 2012.
- Invited session at "ECCOMAS Coupled Problems", Venice, Italy, 2015.
- Invited MS talk at "GAMM 2009", Gdansk, Poland.
- Invited MS talk at "DMV Tagung 2008", Erlangen, Germany.
- Three invitations to the mathematical centre of research OBERWOLFACH, 2005, 2008 and 2014.

- Invited talks at universities or research institutes: Delft, Stuttgart, Erlangen, Bergen, Oslo, Eindhoven, Hamburg, Munich, Leipzig and Kaiserslautern.

Advising

I advised or co-advised up to now 12 PhD students (6 of them already graduated) and 14 Master students (12 of them already graduated). Three of my Master students received an Abel grant (2013, 2014 and 2016).

Funding record

- VISTA 2017-2020 (Project leader): Adaptive model and solver simulation of enhanced oil recovery (AdaSim) (1 PhD student); I am the main adviser for the PhD student; 3.500.000 NOK.
- NRC-Petromaks2 2016-2019 (Project co-leader): Improving microbial selective plugging technology through experimentally based modelling and simulation (IMMENS) (1 PostDoc and 1 PhD student); I am the main adviser for the PhD student; 10.000.000 NOK.
- NRC-Toppforsk 2016-2020 (Project co-applicant): Thermo-Mechanical Subsurface Energy Storage (TheMSeS) (4 PhD students and 2 PostDocs); I am the main adviser for 1 PhD student and 1 PostDoc; 25.000.000 NOK.
- NRC-CLIMIT 2016-2019 (Project co-applicant): Fundamentals of CO2-Hydrocarbon Interactions for CO2 storage with enhanced recovery in offshore reservoirs: modeling, numerical methods and upscaling (CHI) (1 PhD student and researcher hours at UniCIPR); I am co-adviser of the PhD student; 7.000.000 NOK.
- DAAD-NRC 2016-2017 (Project leader): Efficient discretizations and fast solvers for poroelasticity (EDIFY). Collaboration with University of Hamburg, Germany; 60.000 NOK.
- DAAD-NRC 2016-2017 (Project co-applicant): Upscaling evolving microstructures and its applications. Collaboration with University of Erlangen, Germany; 80.000 NOK.
- UoB/Statoil Project 2016-2019 (Project co-leader): Experimentally based modelling of colloid transport in multiphase porous media (EPOCH) (1 PostDoc position and researcher hours at UoB); 3.500.000 NOK.
- VISTA-Norwegian Academy of Science Project (Project leader) 2014-2017: Efficient and reliable simulation of microbial enhanced oil recovery (1 PostDoc position); $\sim$ 3.300.000 NOK. The project was unfortunately not carried out because the PostDoc candidate obtained an Assoc. Prof. position at UoB and VISTA does not allowing a replacement.
- DAAD-NRC 2013-2014 (Project leader): Higher order variational time discretization and MFEM for flow in porous media. Collaboration with University of Hamburg, Germany; 80.000 NOK.
- DAAD-NRC 2012-2013 (Project leader): MPFA and MHFE methods for flow and transport in porous media. Collaboration with University of Erlangen, Germany; 80.000 NOK.
- Netherlands Organization for Scientific Research personal grant 2015-2016, NWO Visitors Grant 040.11.499; 7.000 EUR.

- Various personal stipends (starting grant, travel grants, inviting researcher grants, sabbatical grant): $\sim$ 70.000 NOK from Meltzer fonds and $\sim$ 375.000 NOK from Statoil/UiB Academia agreement.

Teaching

I have a strong teaching experience which extends over 15 years, more than 20 courses and seminars, and in three languages: Romanian, English and German. I taught both advanced courses and basic courses with up to 400 students. Please find a complete list of my academic lectures at http://people.uib.no/fra001/Radu.html. Since 2011 I had full responsibility for the scientific content of my courses and the examination of the students

Scientific record

ISI Publications	61 articles + 12 proceedings
Publications (total)	95 (77 peer-reviewed)
H-Index / # Citations	17 (Web of Science) / 985 25 (Google Scholar) / 2232

Selected ISI-journal publications 2015-2019:

1. M. Brun, T. Wick, I. Berre, J.M. Nordbotten, **F.A. Radu**, An iterative staggered scheme for phase field brittle fracture propagation with stabilizing parameters, **CMAME**, 2019, to appear.
2. F. List, K. Kumar, I.S. Pop, **F.A. Radu**, Rigorous upscaling of unsaturated flow in fractured porous media **SIAM J. Mathematical Analysis**, 2019, to appear.
3. D. Cerroni, **F.A. Radu**, P. Zunino, Numerical solvers for a poromechanic problem with a moving boundary. **Mathematics in Engineering (MinE)** 1, 2019, pp. 824-848.
4. E. Storvik, J.W. Both, K. Kumar, J.M. Nordbotten, **F.A. Radu**, On the optimization of the fixed-stress splitting for Biot's equations. **IJNME** 120, 2019, pp. 179-194.
5. M. Bause, U. Koecher, **F.A. Radu**, F. Schieweck, Post-processed Galerkin approximation of improved order for wave equations. **Mathematics of Computation**, 2019.
6. M. Borregales, K. Kumar, **F.A. Radu**, C. Rodrigo, F. Gaspar, A partially parallel-in-time fixed-stress splitting method for Biot's consolidation model. **Computers and Mathematics with Applications** 77, 2019, pp. 1466-1478.
7. J.W. Both, K. Kumar, J.M. Nordbotten, **F.A. Radu**, Anderson accelerated fixed-stress splitting schemes for consolidation of unsaturated porous media. **Computers and Mathematics with Applications** 77, 2019, pp. 1479-1502.
8. M. Brun, E. Ahmed, J.M. Nordbotten, **F.A. Radu**. Well-posedness of the fully coupled quasi-static thermo-poro-elastic equations with nonlinear convective transport. **Journal of Mathematical Analysis and Applications** 471, 2019, pp. 239-266.

9. M. Brun, I. Berre, J.M. Nordbotten, **F.A. Radu**. Upscaling of the coupling of hydromechanical and thermal processes in a quasi-static poroelastic medium. **Transport in Porous Media** 124, 2018, pp. 137-158.
10. M. Borregales, **F.A. Radu**, K. Kumar, J.M. Nordbotten, Robust iterative schemes for non-linear poromechanics. Computational Geosciences 22, 2018, pp. 1021-1038.
11. D. Seus, K. Mitra, I.S. Pop, **F.A. Radu**, C. Rohde, A linear domain decomposition method for partially saturated flow in porous media. **Computer Methods in Applied Mechanics and Engineering (CMAME)** 333, 2018, pp. 331-355.
12. **F.A. Radu**, J.M. Nordbotten, I.S. Pop, K. Kumar, A convergent mass conservative numerical scheme based on mixed finite elements for two-phase flow in porous media. **IMA Journal of Numerical Analysis 2017**, doi: 10.1093/imanum/drx032.
13. M. Bause, **F.A. Radu**, U. Köcher, Error analysis for discretizations of parabolic problems using continuous finite elements in time and mixed finite elements in space. **Numerische Mathematik** 137 (4), 2017, pp. 773-818.
14. M. Bause, **F.A. Radu**, U. Köcher, Space-time finite element approximation of the Biot poroelasticity system with iterative coupling. **Computer Methods in Applied Mechanics and Engineering (CMAME)** 320, 2017, pp. 745-768.
15. S. Karpinski, I.S. Pop, **F.A. Radu**, Analysis of a linearization scheme for an interior penalty discontinuous Galerkin method for two phase flow in porous media with dynamic capillarity effects. **International Journal for Numerical Methods in Engineering** 112 (6), 2017, 112, pp. 553-577.
16. D. Landa Marban, **F.A. Radu**, J.M. Nordbotten, Modeling and simulation of microbial enhanced oil recovery including interfacial area. **Transport in Porous Media** 102 (2), 2017, pp. 395-413.
17. J. Both, M. Borregales, K. Kumar, J.M. Nordbotten, **F.A. Radu**, Robust fixed stress splitting for Biot's equations in heterogeneous media. **Applied Math. Letters** 68, 2017, pp. 101-108.
18. L. Vasilyev, J.M. Nordbotten, **F.A. Radu**, K. Kumar, On the properties of the parameter space of generalized continuum transport model for description of fluid flow in porous networks. **Transport in Porous Media** 119 (3), 2017, pp. 673-688.
19. V. Ruas, **F.A. Radu**, Hermite analogs of the lowest order Raviart-Thomas mixed method for convection-diffusion equations. **Computational and Applied Mathematics 2017**, DOI: 10.1007/s40314-017-0474-5.
20. C. Bringedal, I. Berre, I.S. Pop, **F.A. Radu**, Upscaling of non-isothermal reactive porous media flow under dominant Peclet number: the effect of changing porosity. **SIAM MMS** 14, 2016, pp. 502-533.
21. F. List, **F.A. Radu**, A study on iterative methods for Richards' equation. **Computational Geosciences** 20, 2016, pp. 341-353.
22. C. Bringedal, I. Berre, I.S. Pop, **F.A. Radu**, Upscaling of non-isothermal reactive porous media flow with changing porosity. **Transport in Porous Media** 114, 2016, pp. 371-393.

23. **F.A. Radu**, J.M. Nordbotten, I.S. Pop, K. Kumar, A robust linearization scheme for finite volume based discretizations for simulation of two-phase flow in porous media. **J. Comput. and Appl. Math.** 289, 2015, pp. 134-141.

24. C. Bringedal, I. Berre, I.S. Pop, **F.A. Radu**, A model for non-isothermal flow and mineral precipitation and dissolution in a thin strip. **J. Comput. and Appl. Math.** 289, 2015, pp. 346-355.