

Dr Behrouz Emamizadeh

Personal Details

Associate Professor in Mathematics

Qualifications

BSc (UMass, Cum Laude), MSc (Purdue), PhD (Bath)

Contact

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Short Biography I joined the UNNC in August, 2013. Before that I was an associate professor at the XJTU, where I held the post of the Director of the Applied Mathematics Programme. Prior to that, I worked for six years for an oil company in the ME, after concluding 16 years tenure at the Iran University of Science and Technology, Tehran, Iran.

My research area is nonlinear partial differential equations associated with physical phenomena arising in solid and fluid mechanics, economics and biology. The type of questions that I address range a wide spectrum starting from the existence and uniqueness of solutions to more modern questions pertaining to the symmetry and regularity of the solutions. Recently, in collaboration with Dr Amin Farjudian, we have been able to produce numerical results confirming our theoretical outputs.

Professional Activities

Scholarly Activities

- Chairman, the 6th UAE MATHDAY, April 26, 2008, The Petroleum Institute, Abu Dhabi, UAE.
- Chairman, 14th Seminar in Mathematical Analysis and Its Applications, Feb. 4-5, 2004, IUST, Iran.
- Co-chairman, First workshop on nonlinear functional analysis and its applications, Jan. 20-24, 2002, Shahid Beheshti University, Tehran, Iran.
- Member of the scientific and organizing committees of the 2nd international conference on applied mathematics, IUST, October 25-27, 2000.
- Member of the organizing committee of the 1st international conference on applied mathematics, IUST, Oct. 17-19, 1991.

Editorial Services

- Editor Australian Journal of Mathematical Analysis and Applications, Australia.
- Editor Involve: A Journal in Mathematics, UC-Berkeley.
- Editor Journal of Pro-Poor Growth.
- Reviewer, Mathematical Reviews, USA.

Publications

Refereed Journal Papers

1. **B. Emamizadeh**, M. Marras, Some optimization problems with free boundaries, Numerical Functional Analysis and Optimization, 35 (2014), no. 4, 404–422.
2. A. Farjudian and **B. Emamizadeh**, Some results on radial symmetry in partial differential equations, New York Journal of mathematics, 20 (2014) 241-255.
3. **B. Emamizadeh** and Yichen Liu, Constrained and unconstrained rearrangement minimization problems related to the P-Laplace operator, To appear, Israel Journal of Mathematics.
4. Yichen Liu and **B. Emamizadeh**, How to construct a robust membrane using multiple materials, submitted, Michigan Mathematical Journal.
5. Mohsen Zivari-Rezapour, Amin Farjudian and **B. Emamizadeh**, Optimization problems related to some nonlocal problems of Kirchhoff type, completed.
6. A. Farjudian and **B. Emamizadeh**, Absolute continuity in partial differential equations, Submitted to Real Analysis Exchange.
7. A. Farjudian and **B. Emamizadeh**, Monotonicity of the Principal eigenvalue related to a non-isotropic vibrating membrane, Submitted, Nonautonomous Dynamical Systems.
8. A. Farjudian and **B. Emamizadeh**, Maximal mean exit time related to the P-Laplace operator, Submitted to Journal of Mathematical Analysis with Applications.
9. **B. Emamizadeh** and M. Zivari-Rezapour, Optimization of the principal eigenvalue of the pseudo P-Laplacian operator with Robin boundary conditions, International Journal of Mathematics, Vol. 23 (12), 1250127, 17 pp, 2012.
10. **B. Emamizadeh** and M. Zivari-Rezapour, Equality case in Tallenti inequality, Electronic Journal of Differential Equations, Vol. 2011, No. 165, 2011, pp. 1-8.
11. **B. Emamizadeh** and M. Zivari-Rezapour, Rearrangements and Minimization of the Principal eigenvalue of a nonlinear Steklov problem, Nonlinear Analysis TMA, Vol. 74, 2011, pp. 5697-5704.
12. F. Bahrami, **B. Emamizadeh** and A. Mohammadi, Existence of an extremal ground state energy of a nanostructured quantum dot, Nonlinear Analysis TMA, Vol. 74, issue 17, 2011, pp 6287-6294.
13. **B. Emamizadeh**, J. Prajapat, H. Shahgholian, A two phase free boundary problem related to quadrature domains, Potential Analysis, Vol. 34, no. 2, 2011, pp. 119-138.
14. **B. Emamizadeh**, Decreasing rearrangement and measure preserving maps, Real Analysis Exchange, Vol. 36, no. 1, 2011, pp 161-168.
15. F. Cuccu, **B. Emamizadeh** and G. Porru, Design of a composite membrane with patches, Applied Mathematics and Optimization, Vol. 62, no. 2, 2010, pp 164-184.
16. **B. Emamizadeh** and J. V. Prajapat, Minimax rearrangement optimization problems, Optimization Letters, Vol. 5, No. 4, 2011, pp. 647-664.
17. **B. Emamizadeh**, Applications of a weighted symmetrisation inequality to elastic membranes and plates, Journal of Inequalities and applications, Vol. 2010, 2010, 12 pages.
18. **B. Emamizadeh**, K. Ivaz and T. Nikazad, Unique Continuation and Inverse Problems for Heat Equations, Advanced Modeling and Optimization, Vol. 12, 2010, pp. 225-232.
19. **B. Emamizadeh** and M. Al Hanai, Investment in real estates and rearrangements, Numerical Functional Analysis and Optimization, Vol 30, No. 5 and 6, 478-485, 2009.
20. F. Cuccu, **B. Emamizadeh** and G. Porru, Optimization of the first eigenvalue in problems involving the P-Laplacian, Proceedings of the American Mathematical Society. Vol. 137, no. 5, pp. 1677-1687, 2009.

21. **B. Emamizadeh**, J. Prajapat, Symmetry in rearrangement optimization problems, Electronic Journal of Differential Equations, Vol. 2009(2009), no. 149, pp. 1-10.
22. **B. Emamizadeh** and M. Zivari, Monotonicity of the principal eigenvalue of the p-Laplacian in an annulus, Proceedings of AMS, Vol 136, 2008, 1725-1731.
23. **B. Emamizadeh** and R. I. Fernandes, Optimization of the principal eigenvalue of the one dimensional Schrödinger operator. Electronic Journal of Differential Equations, Vol 65, 2008, 1-11.
24. **B. Emamizadeh**, R. I. Fernandes and M. Poshtan, Applications of rearrangements to nonlinear optimization problems. Advanced Modeling and Optimization, Vol. 10 (2008), no. 2, 323--329.
25. S. H. Al Hashimi, K. Dib and **B. Emamizadeh**, Existence of positive solutions to a nonlinear Biharmonic equation, International Mathematical Forum, Vol. 3, (40), 2008, 1959-1964.
26. **B. Emamizadeh** and M. Zivari, Optimization problem for a nonlinear elliptic equation, Journal of Optimization Theory and Applications, Vol. 135 (3), 367-379, 2007.
27. D. Allison and **B. Emamizadeh**, Shape optimizations and rearrangements. Far East Journal of Dynamical systems, Vol. 9(1), 2007, 93-106.
28. A. Didenko and **B. Emamizadeh**, A characterization of balls using the domain derivative, Electronic Journal of Differential Equations, 154, 2006,1-5.
29. F. Cuccu, **B. Emamizadeh** and G. Porru, Optimization of the first eigenvalue in problems involving the P-Laplacian, Proceedings of the American Mathematical Society. Vol. 137, no. 5, pp. 1677-1687, 2009.
30. F. Cuccu, **B. Emamizadeh** and G. Porru, Rearrangement optimization of composite membranes, Vol. 47, 2006, 12 pages, Journal of Mathematical Physics.
31. **B. Emamizadeh** and M. H. Mehrabi, Existence of solutions to the three dimensional Barotropic-vorticity equation, Methods and Applications of Analysis. Vol 14, no. 1, 2007, 77--85.
32. F. Cuccu, **B. Emamizadeh** and G. Porru, Nonlinear elastic membrane involving the P-Laplacian operator, Electronic Journal of Differential Equations, Vol. 2006 (49) (2006), 1-10.
33. **B. Emamizadeh** and M. Zivari, Applications of monotone rearrangements to a certain class of boundary value problems, International Journal of Applied Mathematics, Vol 18 (3), 279-288, 2005.
34. G. Auchmuty, **B. Emamizadeh** and M. Zivari, Dependence of Friedrichs' Constant on Boundary Integrals, Proc. Royal Society of Edinburgh-Section A (Mathematics), Vol. 135 (5) (2005), 935-940.
35. **B. Emamizadeh** and F. Bahrami, Existence of seamount steady vortex flows. The J. Australian Math. Soc., Series B, 47, 2005, 75-88.
36. **B. Emamizadeh**, Decreasing rearrangements and a fuzzy variational problem. Applied Math. Lett., Vol. 18 (2), 2005, 171-178.
37. **B. Emamizadeh**, F. Bahrami and M. H. Mehrabi, Steiner symmetric vortices attached to seamounts, Comm. Pure. Appl. Analysis. 3(4), 2004, 663-674.
38. **B. Emamizadeh** and F. Bahrami, Existence of solutions for Barotropic-Vorticity equation in an unbounded domain, Rocky Mountain Journal of Mathematics. 36(1), 2006, 135-147.
39. **B. Emamizadeh**, An inverse heat equation in two space dimensions, Appl. Math. Letters, Vol. 17(10), 2004, 1161-1165.

40. **B. Emamizadeh**, A variational problem for steady vortices in a shear flow past an obstacle, Journal of Computational Analysis and Applications, Vol. 5(4), 2003, 399-411.
41. J. Nycander and **B. Emamizadeh**, Variational problem for vortices attached to seamounts, Nonlinear Anal., 55(2003), 15-24.
42. **B. Emamizadeh** and M. H. Mehrabi, Uniqueness and radial symmetry for an inverse elliptic equation, Int. J. Math. Math. Sci., 48(2003), 3047-3052.
43. **B. Emamizadeh** and M. H. Mehrabi, Asymptotic behavior of the centroids of a family of vortices, J. Math. Phys., 44(2003), 4119-4133.
44. **B. Emamizadeh** and F. Bahrami, Steady vortex flows obtained from an inverse problem, Bull. Austral. Math. Soc., 66 (2002), 213-226.
45. **B. Emamizadeh** and M.H. Mehrabi, Steady vortex flows obtained from a constrained variational problem, Internat. J. Math. Math. Sci., 30(2002), 283-300.
46. **B. Emamizadeh**, Existence of a steady flow with bounded vortex in an unbounded domain, Journal of Sciences I.R.I, 12 (1), 57-63, 2001.
47. **B. Emamizadeh**, Steady vortex in a uniform shear flow of an ideal fluid, Proceedings Royal Society Edin., 130(4), 801-812, 2000.
48. G. R. Burton and **B. Emamizadeh**, A constrained variational problem for the steady vortices in a shear flow, Communications in PDE, 24(7/8), 1999, pp 1341-1365.

Recent Research and Travel Grants

- 2007-2010 Title: Estimates and optimization of the principal eigenvalue for the p-Laplacian operator. Abu Dhabi National Oil Company, USD 30000.
- 2009 Travel Grant, to visit the Royal Institute of Technology, USD 3000.
- 2005 Travel Grant, to visit the University of Cagliari, USD 8000.

Supervised Student Theses/Dissertations

Doctor of Philosophy (PhD)

1. Liu, Y., 2011-2013, *Xi'an Jiaotong-Liverpool University*.
2. Zivari-Rezapour, M., 2007, *Dr. Zivari-Rezapour is currently an assistant professor at Ahwaz University, Iran.*
3. Mehrabi, M., 2005, *Dr. Mehrabi is currently an assistant professor at Ahwaz University, Iran.*
4. Bahrami, F., 2004, *Dr. Bahrami is currently an associate professor at the University of Tabriz, Iran.*

PhD Thesis Examination

1. Lindgren, E. (2009), *supervisor: Prof. H. Shahgholian*, Royal Institute of Technology, Sweden.
2. Karakhanyan, A. (2004), Royal Institute of Technology, Sweden. *Dr. Karakhanyan is currently a Lecturer at the University of Edinburgh, UK.*
3. Khatibzadeh, M. (2003), *Supervisor: Prof. B. Rouhani*, Tarbiat Modarres University, Iran.

4. Moameni, A. (2003), *Supervisor: Prof. M. Hesaraaki*, Shraif University of Technology, Iran. *Dr. Momeni is currently an assistant professor at the University of Lethbridge, Canada.*

Awards and Honors

- Visiting Fellowship, Issac Newton Institute for Mathematical Sciences, Cambridge University, 2014.
- "Research and Scholarship Award" of the academic year 2005-6, the Petroleum Institute, Abu Dhabi, UAE.
- Member, Institute for Studies in Theoretical Physics and Mathematics (IPM), 2001-2004. The membership was awarded to only nine researchers in Iran.
- "Outstanding Teaching Award" of the academic year 1999-2000 IUST, at the undergraduate and graduate levels.

Visits

1. Visiting Professor, The Royal Institute of Technology, Sweden, June 1-June 7, 2009.(Host: Professor H. Shahgholian)
2. Visiting professor, The University of Cagliari, Italy, July 3-24, 2005 (Host: Professor G. Porru).
3. Visiting Scholar, The Royal Institute of Technology, Sweden, May 1-18, 2004 (Host: Professor H. Shahgholian).
4. Lebanese University and the American University in Beirut, October 21-28, 2002 (Hosts: Professors M. Jazar and A. Shamseddin).