

## **CURRICULUM VITAE of Alexei A. Mailybaev**

### **Birth date and place**

March 17, 1975. Vilnius, Republic of Lithuania.

### **Professional Address**

Instituto Nacional de Matemática Pura e Aplicada – IMPA  
Estrada Dona Castorina 110, Rio de Janeiro, Brazil 22460-320  
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### **Scientific interests**

Fluid dynamics and turbulence  
Nonlinear waves  
Reactive flows in porous media  
Spectral singularities in mathematics and physics  
Stability and vibrations of mechanical systems

### **Spoken languages**

Russian, English, Portuguese, German

### **Education/Scientific degrees**

- 1997 M.Sc. (with honors), Faculty of Mechanics and Mathematics,  
Lomonosov Moscow State University, Russia  
Advisor: Alexander P. Seyranian
- 1999 Ph.D., Faculty of Mechanics and Mathematics,  
Lomonosov Moscow State University, Russia  
Thesis: Singularities of stability domain boundaries: analysis and applications  
Advisor: Alexander P. Seyranian
- 2009 D.Sc. (Doctor of Sciences in Mathematics and Physics)  
Institute of Mechanics, Lomonosov Moscow State University, Russia  
Thesis: Multiparameter problems of stability theory

### **Professional Experience**

1996-2015 Junior Researcher (from 1996), Researcher (from 1999),  
Senior Researcher (from 2003), Chief Researcher (from 2009).

- Institute of Mechanics, Lomonosov Moscow State University, Russia
- 2011-2016 Associate Professor (Pesquisador Associado),  
Instituto Nacional de Matemática Pura e Aplicada – IMPA,  
Rio de Janeiro, Brazil
- 2016-now Full Professor (Pesquisador Titular),  
Instituto Nacional de Matemática Pura e Aplicada – IMPA,  
Rio de Janeiro, Brazil

### **Scientific collaboration with research visits**

Côte d'Azur Observatory, Nice, France  
 Princeton University, USA  
 University of Rome – Tor Vergata, Italy  
 Vienna University of Technology, Austria  
 Université Nice Sophia Antipolis, France  
 P.P. Shirshov Institute of Oceanology, Moscow, Russia  
 Lebedev Physical Institute, Moscow, Russia  
 Lomonosov Moscow State University, Russia  
 Universidade Federal do Rio de Janeiro, Brazil  
 Universidade Federal de Juiz de Fora, Brazil  
 Technical University of Delft, The Netherlands  
 DISAT, University of L'Aquila, Italy  
 Technion – Israel Institute of Technology, Haifa, Israel  
 Department of Engineering Mechanics, Dalian University of Technology, Dalian, China  
 Institute of Engineering Mechanics and Systems, University of Tsukuba, Japan  
 Polytechnic University of Catalonia, Barcelona, Spain  
 Faculty of Nonlinear Processes, Saratov State University, Russia  
 Department of Solid Mechanics, Technical University of Denmark, Lyngby, Denmark

### **Member of Editorial Board of Scientific Journal**

Mathematical Problems in Engineering (2010-2014).

### **Scientific Journal Referee**

ACS Photonics, Acta Mechanica, Advances in Water Resources, Applicable Analysis, Applied Mathematical Modelling, Applied Mathematics and Computation, Bulletin Brazilian Mathematical Society, Combustion and Flame, Combustion Science and Technology, Energy & Fuels, Entropy, Fuel, IMA Journal of Mathematical Control and Information, International Journal of Green Energy, International Journal of Solids and Structures, Journal of Applied Mathematics and Mechanics, Journal of Petroleum Science

& Engineering, Journal of Physics A: Mathematical and General, Journal of Porous Media, Journal of Sound and Vibration, Linear Algebra and its Applications, Linear and Multilinear Algebra, Matemática Aplicada e Computacional, Mathematical Problems in Engineering, Mathematical Reviews, Mathematics and Mechanics of Complex Systems, New Journal of Physics, Nonlinear Dynamics, Nonlinearity, Numerical Linear Algebra with Applications, Optics Letters, Optics Express, Physical and Engineering Sciences, Physical Review A, Physical Review E, Physical Review Letters, Proceedings of the Royal Society A – Mathematical, Structural and Multidisciplinary Optimization, The European Physical Journal. E, Soft Matter, Europhysics Letters, Zeitschrift für Angewandte Mathematik und Physik (ZAMP).

### **Awards**

- 2017 InterPore Rosette for very significant contributions to InterPore activities, The International Society for Porous Media (InterPore).
- 2005 Young scientist prize of the EUROMECH Nonlinear Oscillation Conference, Eindhoven, The Netherlands
- 2002 Elsevier Science Publishers Award for the best paper of the year 2001 in the Journal of Applied Mathematics and Mechanics
- 2000. Second Prize of the All-Russian Young Scientists Competition on Mechanics and Control dedicated to the 100th Anniversary of A.I. Lurie

### **Grants and Fellowships**

- CNPq Universal 406431/2018-3 (2019-2021)
- FAPERJ Pensa Rio grant (2015-2018)
- CNPq Bolsa de Produtividade em Pesquisa (2012-2024)
- CNPq Universal 477907/2011-3 (Apoio a Projetos de Pesquisa, 2011-2013)
- Grants of the President of Russian Federation (2004-2009)
- Research grant of the International Association for the promotion of cooperation with scientists from the independent states of the former Soviet Union (INTAS), 2007-2008, within a group
- Grants of the Russian Foundation of Basic Research, 1999-2001, 2003-2005, 2012-2015
- U.S. Civilian Research & Development Foundation (CRDF) and the Russian Federation Ministry of Education BRHE post-doctoral fellowship, 2003-2006
- Russian-Chinese research grant of the Russian Foundation for Basic Research (RFBR) and the National Science Foundation of China, 2002-2004 and 2009-2011, within a group
- Japan Society for the Promotion of Science (JSPS) Invitation Fellowship for Research in Japan, 2003

Individual grant of the RSCI project “Young Scientists of Russia”, 2001

Young Scientists Fellowship of the International Association for the promotion of cooperation with scientists from the independent states of the former Soviet Union (INTAS), 2001-2002.

Stipendium of Moscow State Lomonosov University for Talented Young Researchers and Teachers, 2001.

Fellowship of the first MIT Conference on Computational Fluid and Solid Mechanics, Massachusetts Institute of Technology (USA), 2001.

Stipendium of Russian Federation for young talented scientists, 2000-2003

### **Invited/plenary lectures**

ICMC Summer Meeting on Differential Equations (online), São Paulo, 2022.

Conference TURB1D 2020 (online), 2020.

Meeting in Turbulence: Problems at the Interface of Mathematics and Physics, ICTS, Bangalore, 2020.

1st Workshop "Matemática e Indústria", IMPA - Rio de Janeiro, 2020.

One day workshop on counterintuitive phenomena controlled by exceptional points (EPs), Technion, Haifa, Israel, 2019.

Day Workshop “Singularity and Irreversibility” at CEA Saclay, France, 2019.

Conference on "Universal features of hydrodynamical, optical and wave turbulence": Nice, France, 2019.

3d BR InterPore Conference on Porous Media. LNCC, Petropolis, 2019.

SRitp Workshop “Fluid flows, from Graphene to planet atmospheres”, Weizmann Institute of Science, Israel, 2018.

Workshop “Geometrical and Statistical Fluid Dynamics”, Simons Center for Geometry and Physics, Stony Brook, 2017.

Mathematical Congress of the Americas, Bogota, Colombia, 2017.

Workshop on Turbulent Dissipation, Mixing and Predictability, IPAM, UCLA, Los Angeles, 2017.

IMPA-Bath Workshop in Mathematics, Rio de Janeiro, 2017.

II Congresso Brasileiro de Jovens Pesquisadores em Matemática Pura e Aplicada, Rio de Janeiro, 2016.

Fourth Workshop on Fluids and PDE, Rio de Janeiro, 2014.

Congresso Nacional de Matemática Aplicada e Computacional. Águas de Lindóia, Brazil, 2012.

Workshop “Non-Hermitian Degeneracies: new directions of research and applications”.

Haifa, Israel, 2012.

XXXVII International Summer School – Conference “Advanced Problems in Mechanics”. Saint Petersburg, Russia, 2009.

10th International Conference Stability, Control and Rigid Bodies Dynamics. Donetsk, Ukraine, 2008.

3rd International Workshop on Pseudo-Hermitian Hamiltonians in Quantum Physics. Istanbul, Turkey, 2005.

International Conference: Mathematical Ideas of P.L.Chebyshev and their applications to modern problems. Obninsk, Russia, 2002.

### **Organization of scientific events (chair or co-chair)**

Colóquio Brasileiro de Matemática. Special section: Mathematical and Computational Aspects of Fluid Dynamics. IMPA, Rio de Janeiro, 2019.

Workshop on Mathematical and Computational Problems of Incompressible Fluid Dynamics. IMPA, Rio de Janeiro, 2018.

Mini-symposium at 9th International Conference on Porous Media & Annual Meeting. Rotterdam, The Netherlands, 2017.

2nd IMPA-InterPore Conference on Porous Media: Conservation Laws, Numerics and Applications. IMPA, Rio de Janeiro, 2016.

Workshop on Instantons and Extreme Events in Turbulence and Dynamical Systems. IMPA, Rio de Janeiro, 2015.

Workshop on Simulation of Complex Processes in Porous Media. IMPA, Rio de Janeiro, 2015.

Colóquio Brasileiro de Matemática.  
Sessão Temática: Leis de Conservação, Escoamento em Meios Porosos e Aplicações. IMPA, Rio de Janeiro, 2015.

1st IMPA-InterPore Workshop on Porous Media. IMPA, Rio de Janeiro, 2014.

5th International Conference on Physics and Control (PhysCon 2011).  
Invited Mini-symposium: “Stability Problems with Applications in Physics and Mechanics”. Leon, Spain, 2011.

### **Membership in scientific societies**

The International Society of Structural and Multidisciplinary Optimization ISSMO (since 1997)

American Mathematical Society AMS (since 2000)

International Physics and Control Society IPACS (since 2005)

International Society for Porous Media InterPore (since 2012),  
(Founder and chair of the Brazilian InterPore Chapter)

## **Courses taught**

Stability and Catastrophes in Mechanical Systems  
 Spontaneous Stochasticity  
 Lectures on Boundaries of Stability Domains (mini-course)  
 Thermal Flow of Fluids  
 Introduction to the Theory of Oscillations and Waves  
 Measure and Integration  
 Partial Differential Equations  
 Fluid Dynamics  
 Bifurcation Theory  
 Introduction to Lattice Boltzmann Method in Fluid Dynamics  
 Ordinary Differential Equations  
 Linear Algebra and Applications  
 Topics in Mathematics of Turbulence

## **Supervision of students/postdocs**

Grigori Chapiro (PhD, 2009)  
 Negar Khoshnevis Gargar (PhD, 2014; joint project with TU Delft, The Netherlands)  
 Jorg Doppler (PhD, 2016; joint project with TU Wien, Austria)  
 Guilherme Tegoni Goedert (MSc, 2016, IMPA)  
 Pablo Javier Antuña Benitez (MSc, 2016, IMPA)  
 Massimo de Pietro (PhD, 2017; joint project with U. of Rome – Tor Vergata, Italy).  
 Daniel Magalhães Moura Neto (MSc, 2017, IMPA)  
 Ciro Sobrinho Campolina Martins (MSc, 2019, IMPA)  
 Vítor De Oliveira Sudbrack (BSc scientific project, 2018, IMPA)  
 Hugo Saraiva Tavares (PhD, 2020, IMPA)  
 Jose Manuel Escorcia Tafur (PhD, 2021, IMPA)  
 Júlia Domingues Lemos (PhD, ongoing, IMPA)  
 Ciro Sobrinho Campolina Martins (PhD, ongoing, IMPA)  
 André Luís Peixoto Considera (PhD, ongoing, IMPA – U.Paris-Saclay)  
 Antoine Barlet (PhD, ongoing, U.Paris-Saclay – IMPA)

Max Akira Endo Kokubun (postdoc 2014-2016, IMPA)  
 Fabio Pereira dos Santos (postdoc 2014-2015, IMPA)  
 Simon Thalabard (postdoc, 2018-2021, IMPA)

## LIST OF PUBLICATIONS

### Books

1. A.P. Seyranian and A.A. Mailybaev, *Multiparameter Stability Theory with Mechanical Applications*, World Scientific, New Jersey, 2004.  
Book reviews: <http://www.worldscientific.com/worldscibooks/10.1142/5305#t=reviews>
2. A.A. Mailybaev and A.P. Seyranian, *Multiparameter Stability Problems. Theory and Applications in Mechanics*, Fizmatlit, Moscow, 2009 (in Russian).

### Publications in scientific journals

1. A.A. Mailybaev and S. Thalabard, Hidden scale invariance in Navier-Stokes intermittency, *Philosophical Transactions of the Royal Society A* **380**, 20210098 (2022).
2. D.S. Agafontsev, E.A. Kuznetsov, A.A. Mailybaev and E.V. Sereshchenko, Compressible vortex structures and their role in the onset of hydrodynamic turbulence, *Physics-Uspekhi* **65** (2) (2022).
3. A.A. Mailybaev, Solvable intermittent shell model of turbulence, *Communications in Mathematical Physics* **388**, 469-478 (2021).
4. H.S. Tavares, L. Biferale, M. Sbragaglia, A.A. Mailybaev, Immiscible Rayleigh-Taylor turbulence using mesoscopic lattice Boltzmann algorithms, *Physical Review Fluids* **6**, 054606, (2021).
5. H.S. Tavares, L. Biferale, M. Sbragaglia, A.A. Mailybaev, Validation and application of the lattice Boltzmann algorithm for a turbulent immiscible Rayleigh-Taylor system, *Philosophical Transactions of the Royal Society A* **379**: 20200396 (2021).
6. C.S. Campolina and A.A. Mailybaev, Fluid dynamics on logarithmic lattices, *Nonlinearity* **34**, 4684-4715 (2021).
7. T.D. Drivas and A.A. Mailybaev, 'Life after death' in ordinary differential equations with a non-Lipschitz singularity, *Nonlinearity* **34**, 2296-2326 (2021).
8. D.S. Agafontsev, E.A. Kuznetsov and A.A. Mailybaev, Stability of tangential discontinuity for the vortex pancakes, *JETP Letters* **114**, 71-75 (2021).
9. A. A. Mailybaev, Hidden scale invariance of intermittent turbulence in a shell model, *Physical Review Fluids* **6**, L012601 (2021).
10. J. Feilhauer, A. Schumer, J. Doppler, A. A. Mailybaev, J. Böhm, U. Kuhl, N. Moiseyev, and S. Rotter, Encircling exceptional points as a non-Hermitian extension of rapid adiabatic passage, *Physical Review A* **102**, 040201(R) (2020).
11. N. Khoshnevis Gargar, J. Bruining, M.A. Endo Kokubun, D. Marchesin and A.A. Mailybaev, Combustion in miscible displacement for high-pressure air injection, *Computational Geosciences* **24**, 1663-1672 (2020).
12. S. Thalabard, J. Bec and A. A. Mailybaev, From the butterfly effect to spontaneous stochasticity in singular shear flows, *Communications Physics* **3**, 122 (2020).

13. D.S. Agafontsev, E.A. Kuznetsov and A.A. Mailybaev, Compressible structures in incompressible hydrodynamics and their role in turbulence onset, *IOP Conf. Series: Earth and Environmental Science* **231**, 012002 (2019).
14. A.A. Mailybaev and A. Nachbin, Explosive ripple instability due to incipient wave breaking, *Journal of Fluid Mechanics* **863**, 876-892 (2019).  
Selected for: [JFM cover](#)
15. D.S. Agafontsev, E.A. Kuznetsov and A.A. Mailybaev, Statistical properties of the velocity field for the 3D hydrodynamic turbulence onset, *JETP Letters* **110** (2019), 121-126.
16. C.S. Campolina and A.A. Mailybaev, Chaotic blowup in the 3D incompressible Euler equations on a logarithmic lattice. *Physical Review Letters* **121** (2018), 064501.
17. T. Goldzak, A.A. Mailybaev and N. Moiseyev, Light stops at exceptional points. *Physical Review Letters* **120** (2018), 013901.  
Selected for: [Newsweek](#), [The Independent](#), [Daily Mail](#), [Phys.org](#), [Science Alert](#), [Europa press](#), [International Business Times](#), [Live Science](#), [Revista Pesquisa Fapesp](#)
18. L. Biferale, G. Boffetta, A.A. Mailybaev and A. Scagliarini, Rayleigh-Taylor turbulence with singular non-uniform initial conditions, *Physical Review Fluids* **3** (2018), 092601(R).
19. D.S. Agafontsev, E.A. Kuznetsov, A.A. Mailybaev, Development of high vorticity structures and geometrical properties of the vortex line representation, *Physics of Fluids* **30** (2018), 095104.
20. A.A. Mailybaev, Toward analytic theory of the Rayleigh-Taylor instability: lessons from a toy model, *Nonlinearity* **30** (2017), 2466-2484.
21. M.A. Endo Kokubun and A.A. Mailybaev, Singularity of a combustion wave profile: a clue to the multi-component theory for liquid-gas filtration, *SIAM Journal on Applied Mathematics* **77** (2017), 1375-1396.
22. L. Biferale, A.A. Mailybaev and G. Parisi, Optimal subgrid scheme for shell models of turbulence, *Physical Review E* **95** (2017), 043108.
23. D.S. Agafontsev, E.A. Kuznetsov and A.A. Mailybaev, Asymptotic solution for high-vorticity regions in incompressible three-dimensional Euler equations. *Journal of Fluid Mechanics* (2017) **813**, R1.
24. M. de Pietro, A.A. Mailybaev, L. Biferale, Chaotic and regular instantons in helical shell models of turbulence. *Physical Review Fluids* (2017) **2**, 034606.
25. Д.С. Агафонцев, Е. А. Кузнецов, А. А. Майлыбаев, Опрокидывание вихревых линий как предтеча колмогоровской турбулентности. *Нелинейные волны*. Нижний Новгород: ИПФ РАН, 2017. С.304-319. (in Russian)
26. J. Doppler, A.A. Mailybaev, J. Böhm, U. Kuhl, A. Girschik, F. Libisch, T.J. Milburn, P. Rabl, N. Moiseyev, S. Rotter, Dynamically encircling an exceptional point for asymmetric mode switching, *Nature* (2016) **537**:7618, 76-79.  
Selected for: *Nature Physics News&Views (Math.Phys.)*: <http://dx.doi.org/10.1038/nphys3864>
27. D.S. Agafontsev, E.A. Kuznetsov and A.A. Mailybaev, Development of high vorticity in incompressible 3D Euler equations: influence of initial conditions, *JETP Letters* (2016) **104**:10, 685-689.



28. F.P. Santos, A.A. Mailybaev and D. Marchesin, Oxidation wave structure and oxygen breakthrough for air injection into light oil reservoirs, *Computational Geosciences* (2016) **20**, 1095-1107.
29. A.A. Mailybaev, Spontaneously stochastic solutions in one-dimensional inviscid systems, *Nonlinearity* **29** (2016), 2238-2252.
30. M.A. Endo Kokubun, N. Khoshnevis Gargar, H. Bruinning, A.A. Mailybaev, Multicomponent effects in liquid-gas filtration combustion, *Combustion & Flame* **169** (2016), 51-62.
31. A.A. Mailybaev, Spontaneous stochasticity of velocity in turbulence models, *Multiscale Modeling and Simulation (SIAM)* **14** (2016), 96-112.
32. A.A. Mailybaev, Continuous representation for shell models of turbulence. *Nonlinearity* **28** (2015), 2497-2514.
33. N.K. Gargar, A.A. Mailybaev, D. Marchesin, J. Bruining, Recovery of light oil by air injection at medium temperature: Experiments. *Journal of Petroleum Science & Engineering* **133** (2015), 29-39.
34. D.S. Agafontsev, E.A. Kuznetsov, A.A. Mailybaev, Development of high vorticity structures in incompressible 3D Euler equations, *Physics of Fluids* **27** (2015), 085102.
35. G. Spelsberg-Korspeter, A. Wagner, A.A. Mailybaev, Stability analysis of a rotating disk with rotating and nonrotating asymmetries in translatory and rotational degrees of freedom, *Journal of Sound and Vibration* **359** (2015), 107-115.
36. M. de Pietro, L. Biferale, A.A. Mailybaev, Inverse energy cascade in nonlocal helical shell models of turbulence, *Physical Review E* **92** (2015), 043021.
37. A.A. Mailybaev, G. Spelsberg-Korspeter, Combined effect of spatially fixed and rotating asymmetries on stability of a rotor, *Journal of Sound and Vibration* **336** (2014), 227-239.
38. N.K. Gargar, A.A. Mailybaev, D. Marchesin, J. Bruining, Compositional effects in light/medium oil recovery by air injection: vaporization vs. combustion, *Journal of Porous Media* **17** (2014), 937-952.
39. N.K. Gargar, A.A. Mailybaev, D. Marchesin, J. Bruining, Effects of water on light oil recovery by air injection, *Fuel* **137** (2014), 200-210.
40. N.K. Gargar, A.A. Mailybaev, D. Marchesin, J. Bruining, Diffusive Effects on Recovery of Light Oil by Medium Temperature Oxidation, *Transport in Porous Media* **105** (2014), 191-209.
41. A.A. Mailybaev, Bifurcations of blowup in inviscid shell models of convective turbulence, *Nonlinearity* **26** (2013), 1105-1124. (Included in Highlights of 2013).
42. A.A. Mailybaev, J. Bruining, D. Marchesin, Recovery of Light Oil by Medium Temperature Oxidation, *Transport in Porous Media* **97** (2013), 317-343.
43. A.A. Mailybaev, Blowup as a driving mechanism of turbulence in shell models, *Physical Review E* **87** (2013), 053011.
44. I. Gilary, A.A. Mailybaev, N. Moiseyev, Time-asymmetric quantum-state-exchange mechanism, *Physical Review A* **88** (2013), 010102.

45. E.-M. Graefe, A.A. Mailybaev, N. Moiseyev, Breakdown of adiabatic transfer of light in waveguides in the presence of absorption, *Physical Review A* **88** (2013), 033842.
46. A.A. Mailybaev and A.P. Seyranian, Instability of a general rotating system with small axial asymmetry and damping, *Journal of Sound and Vibration* **332** (2013), 346-360.
47. G. Chapiro, A.A. Mailybaev, A.J. Souza, D. Marchesin, J. Bruining, Asymptotic approximation of long-time solution for low-temperature filtration combustion, *Computational Geosciences* **16** (2012), 799-808.
48. A.A. Mailybaev, Computation of anomalous scaling exponents of turbulence from self-similar instanton dynamics, *Physical Review E* **86** (2012), 025301(R).
49. A.A. Mailybaev, Renormalization and universality of blowup in hydrodynamic flows, *Physical Review E* **85** (2012), 066317.
50. A.P. Seyranian and A.A. Mailybaev, A remark to the paper by O. N. Kirillov and F. Verhulst Paradoxes of dissipation-induced destabilization or who opened Whitney's umbrella? [ZAMM 90, No. 6, 462-488 (2010)]. *Zeitschrift für Angewandte Mathematik und Mechanik* **92** (2012), 253-253.
51. A.A. Mailybaev, J. Bruining, D. Marchesin, Analytical Formulas for In-Situ Combustion. *SPE Journal* **16** (2011), 513-523.
52. A.A. Mailybaev and A.P. Seyranian, The effect of nonconservative forces on the stability of systems with multiple frequencies and the Nicolai paradox, *Doklady Physics* **56** (2011), 32-38.
53. A.A. Mailybaev, J. Bruining, D. Marchesin, Analysis of in situ combustion of oil with pyrolysis and vaporization, *Combustion and Flame* **158** (2011), 1097-1108.
54. A.P. Seyranian and A.A. Mailybaev, Paradox of Nicolai and related effects, *Zeitschrift für Angewandte Mathematik und Physik* **62** (2011), 539-548.
55. A.A. Mailybaev, D. Marchesin, J. Bruining, Resonance in Low-Temperature Oxidation Waves for Porous Media, *SIAM Journal on Mathematical Analysis* **43** (2011), 2230-2252.
56. R. Uzdin, A.A. Mailybaev, N. Moiseyev, On the observability and asymmetry of adiabatic state flips generated by exceptional points, *Journal of Physics A* **44** (2011), 435302.
57. J. Bruining, A.A. Mailybaev and D. Marchesin, Filtration combustion in wet porous medium, *SIAM Journal on Applied Mathematics* **70** (2009), 1157-1177.
58. A.A. Mailybaev and A.P. Seyranian, Stabilization of statically unstable columns by axial vibration of arbitrary frequency, *Journal of Sound and Vibration* **328** (2009), 203-212.
59. A.A. Mailybaev and A.P. Seyranian, Stabilization of statically unstable systems by parametric excitation, *Journal of Sound and Vibration* **323** (2009), 1016-1031.
60. A.P. Seyranian and A.A. Mailybaev, Vibrational stabilization of statically unstable systems, *Doklady Physics* **54** (2009), 294-300.
61. A.A. Mailybaev and D. Marchesin, Lax shocks in mixed-type systems of conservation laws, *Journal of Hyperbolic Differential Equations* **5** (2008), 295-315.
62. A.A. Mailybaev and D. Marchesin, Hyperbolicity singularities in rarefaction waves, *Journal of Dynamics and Differential Equations* **20** (2008), 1-29.

63. S.P. Kuznestov, A.A. Mailybaev, I.R. Sataev, Birth of a New Class of Period-Doubling Scaling Behavior as a Result of Bifurcation in the Renormalization Equation, *Journal of Statistical Physics* **130** (2008), 599-616.
64. A.A. Mailybaev and A.P. Seyranian, Bifurcations of equilibria in potential systems at bimodal critical points, *Journal of Applied Mechanics* **75** (2008), 021016.
65. A.P. Seyranian and A.A. Mailybaev, Bimodal bifurcations of equilibria in symmetric potential systems, *Doklady Physics* **52** (2007), 600-606.
66. W. Kliem, A.A. Mailybaev and C. Pommer, Conditions revisited for asymptotic stability of pervasive damped linear systems, *Journal of Sound and Vibration* **298** (2006), 471-474.
67. D. Marchesin and A.A. Mailybaev, Dual-family viscous shock waves in n conservation laws with application to multi-phase flow in porous media, *Archive for Rational Mechanics and Analysis* **182** (2006), 1-24.
68. A.A. Mailybaev, Computation of multiple eigenvalues and generalized eigenvectors for matrices dependent on parameters, *Numerical Linear Algebra with Applications* **13** (2006), 419-436.
69. A.A. Mailybaev, O.N. Kirillov and A.P. Seyranian, Berry phase around degeneracies, *Doklady Mathematics* **73** (2006), 129-133.
70. O.N. Kirillov, A.A. Mailybaev and A.P. Seyranian, Singularities of energy surfaces under non-Hermitian perturbations, *Doklady Physics* **50** (2005), 577-582.
71. S.P. Kuznetsov, A.A. Mailybaev and I.R. Sataev, Bifurcation of universal regimes at the boundary of chaos, *Applied Nonlinear Dynamics (Saratov)* **13** (2005), No. 3, 27-47 (in Russian).
72. A.A. Mailybaev, O.N. Kirillov, A.P. Seyranian, Geometric phase around exceptional points, *Physical Review A* **72** (2005), 014104.
73. O. N. Kirillov, A. A. Mailybaev, and A. P. Seyranian, Unfolding of eigenvalue surfaces near a diabolic point due to a complex perturbation, *Journal of Physics A: Mathematical and General* **38** (2005), 5531-5546.
74. A.P. Seyranian, O.N. Kirillov and A.A. Mailybaev, Coupling of eigenvalues of complex matrices at diabolic and exceptional points, *Journal of Physics A: Mathematical and General* **38** (2005), 1723-1740.
75. A.A. Mailybaev, H. Yabuno, and H. Kaneko, Optimal shapes of parametrically excited beams, *Structural and Multidisciplinary Optimization* **27** (2004), 435-445.
76. A.A. Mailybaev and A.P. Seyranian, Interaction of eigenvalues under variation of parameters, *Doklady Mathematics* **68** (2003), 466-470.
77. A.A. Mailybaev, Uncontrollability for linear autonomous multi-input dynamical systems depending on parameters, *SIAM Journal on Control and Optimization* **42** (2003), 1431-1450.
78. M.I. Garcia-Planas and A.A. Mailybaev, Reduction to versal deformations of matrix pencils and matrix pairs with application to control theory, *SIAM Journal on Matrix Analysis and Applications* **24** (2003), 943-962.

79. A.P. Seyranian and A.A. Mailybaev, Interaction of eigenvalues in multi-parameter problems, *Journal of Sound and Vibration* **267** (2003), 1047-1064.
80. A.P. Seyranian and A.A. Mailybaev, Three-dimensional domains of parametric resonance, *Proceedings of Steklov Mathematical Institute* **236** (2002), 291-304.
81. A.A. Mailybaev, On stability domains of nonconservative systems under small parametric excitation, *Acta Mechanica*, **154** (2002), 11-33.
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