

CURRICULUM VITAE

Ochbadrakh CHULUUNBAATAR

Personal Information:

Date of Birth: 24 July 1974

Place of Birth: Ulaanbaatar, Mongolia

Education:

1992 – 1996 Faculty of Mathematics, National University of Mongolia.

Academic degrees:

1998 Master of Science in Numerical Mathematics: “*Some mathematical questions of the few-body problem in quantum mechanics*”, Supervisor: Prof. Kh. Tsookhuu, National University of Mongolia.

2002 Candidate of Sciences in Physics and Mathematics: “*The Newton variation-iteration schemes for numerical study of the three-body quantum systems*”, Supervisors: Profs. I.V. Puzynin and S.I. Vinitzky, JINR.

2010 Doctor of Sciences in Physics and Mathematics: “*The variation-projective methods for investigation of few-body quantum systems*”, Scientific advisers: Profs. I.V. Pusynin and S.I. Vinitzky, JINR.

2018 Academician of the Mongolian Academy of Sciences.

Specialization:

Mathematical Modelling, Numerical Methods and Program Complexes.

Professional Career:

1997 – 1999 Lecturer of the Department of Applied Mathematics, SMCS NUM.

1999 – 2006 Junior Scientist, LCTA/LIT JINR.

2006 – 2010 Senior Scientist, LIT JINR.

2010 – 2011 Leading Scientist, LIT JINR.

Since 2011 Head of Division for Calculations of Complex Physical Systems, LIT JINR.

Since Oct. 2018 Interim Deputy Director of the LIT JINR.

Scientific-Organizational Activities:

Since 2007 Head of National Group of Mongolia in JINR.

Since 2012 Member of the Scientific-Technical Council of LIT JINR.

Bibliography:

Results of the scientific activities have been published in more than 180 articles.

Awards, Prizes:

- 2011 Medal for 90th Anniversary of Mongolian People's Revolution.
- 2011 Certificate of Honor of the Governor of Dubna, Russian Federation.
- 2012 Honorary worker of Science of Mongolia.
- 2012 Laureate of the State Prize of Mongolia.
- 2016 Letter of Thanks of the Governor of Moscow region, Russian Federation.

Present Position:

Laboratory of Information Technologies, Joint Institute for Nuclear Research, Dubna, Moscow Region 141980, Russia

Permanent Position:

Institute of Mathematics, National University of Mongolia, Ulaanbaatar, Mongolia

Scientific Interests:

Computational physics, mathematical modelling, variational and numerical methods in the few-body problem. High accuracy uncoupled correlated calculations of energy of helium isoelectronic bound states. Impact ionization of helium by fast electron or proton in Born's approximation. A multi-channel scattering problem and exact solvable models: Schwinger iteration-variational method, Kantorovich method of reducing a boundary problem to the coupled ordinary differential equations, Monte-Carlo methods, etc.

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LIST OF MAIN PUBLICATIONS BY O. CHULUUNBAATAR (2013-2018)

1. A.A. Gusev, V.P. Gerdt, **O. Chuluunbaatar**, G. Chuluunbaatar, S.I. Vinitsky, V.L. Derbov, A. Gózdź, P.M. Krassovitskiy, *Symbolic-numerical algorithms for solving elliptic boundary-value problems using multivariate simplex lagrange elements*, Lecture Notes in Computer Science **11077**, pp. 197–213 (2018).
2. **O. Chuluunbaatar**, S.I. Vinitsky, A.A. Gusev, V.L. Derbov, and P.M. Krassovitskiy, *Solution of quantum mechanical problems using finite element method and parametric basis functions*, Bulletin of the Russian Academy of Sciences **82**, pp. 654–660 (2018).
3. **O. Chuluunbaatar**, S.I. Vinitsky, A.A. Gusev, V.L. Derbov, and P.M. Krassovitskiy, *Quantum transparency of barriers and reflection from wells for clusters of identical particles*, Bulletin of the Russian Academy of Sciences **82**, pp. 648–653 (2018).
4. A. Galstyan, Yu.V. Popov, N. Janssens, F. Mota-Furtado, P.F. O'Mahony, P. Decleva, N. Quadri, **O. Chuluunbaatar**, B. Piraux, *Ionisation of H₂O by a strong ultrashort XUV pulse: a model within the single active electron approximation*, Chemical Physics **55**, pp. 22–30 (2018).
5. A. Gusev, **O. Chuluunbaatar**, S. Vinitsky, V. Derbov, L. Hai, E. Kazaryan, H. Sarkisyan, *Finite element method for calculating spectral and optical characteristics of axially symmetric quantum dots*, Proceedings of SPIE **10717**, pp. 1071712 (2018).

6. A.A. Gusev, **O. Chuluunbaatar**, Yu.V. Popov, S.I. Vinitzky, V.L. Derbov, K.P. Lovetskiy, *One-dimensional "atom" with zero-range potential perturbed by finite sequence of zero-duration laser pulses*, Proceedings of SPIE **10717**, pp. 1071710 (2018).
7. A.A. Gusev, S.I. Vinitzky, **O. Chuluunbaatar**, V.L. Derbov, A. Gózdź and P. M. Krassovitskiy, *Parametric bases for elliptic boundary value problem*, J. Phys. Conf. Ser. **965**, pp. 012016–1–7 (2018).
8. **O. Chuluunbaatar**, K. Kouzakov and Yu. Popov, *Peculiarities of Matrix-Element Calculations with Few Coulomb Functions for Particles' Scattering Processes*, EPJ Web of Conferences **173**, pp. 03007–1–4 (2018).
9. A. Gusev, S. Vinitzky, **O. Chuluunbaatar**, G. Chuluunbaatar, V. Gerdt, V. Derbov, A. Gózdź and P. Krassovitskiy, *Interpolation Hermite Polynomials for Finite Element Method*, EPJ Web of Conferences **173**, pp. 03009–1–4 (2018).
10. A. Gusev, S. Vinitzky, **O. Chuluunbaatar**, G. Chuluunbaatar, V. Gerdt, V. Derbov, A. Gózdź and P. Krassovitskiy, *High-Accuracy Finite Element Method: Benchmark Calculations*, EPJ Web of Conferences **173**, pp. 03010–1–4 (2018).
11. T. Zhanlav, **O. Chuluunbaatar** and V. Ulziibayar, *Generating Function Approach to the Derivation of Higher-Order Iterative Methods for Solving Nonlinear Equations*, EPJ Web of Conferences **173**, pp. 03024–1–4 (2018).
12. **O. Chuluunbaatar**, S.A. Zaytsev, K.A. Kouzakov, A. Galstyan, V.L. Shablov, and Yu.V. Popov, *Fully differential cross sections for singly ionizing 1-Mev p+He collisions at small momentum transfer: Beyond the First Born approximation*, Phys. Rev. A **96**, pp. 042716–1–7 (2017).
13. T. Zhanlav, **O. Chuluunbaatar** and V. Ulziibayar, *Accelerating the convergence of Newton-type iterations*, J. Numer. Anal. Approx. Theory **46**, pp. 162–180 (2017).
14. T. Zhanlav, **O. Chuluunbaatar** and V. Ulziibayar, *Generating function method for constructing new iterations*, Applied Mathematics and Computation **315**, pp. 414–423 (2017).
15. A.A. Gusev, V.P. Gerdt, **O. Chuluunbaatar**, G. Chuluunbaatar, S.I. Vinitzky, V.L. Derbov, A. Gózdź, *Symbolic-numerical algorithms for solving the parametric self-adjoint 2D elliptic boundary-value problem using high-accuracy finite element method*, Lecture Notes in Computer Science **10490**, pp. 151–166 (2017).
16. A.A. Gusev, V.P. Gerdt, **O. Chuluunbaatar**, G. Chuluunbaatar, S.I. Vinitzky, V.L. Derbov, A. Gózdź, *Symbolic-numerical algorithm for generating interpolation multivariate hermite polynomials of high-accuracy finite element method*, Lecture Notes in Computer Science **10490**, pp. 134–150 (2017).
17. Т. Жаңлав, В. Улзийбаяр, **О. Чулуунбаатар**, *Необходимые и достаточные условия сходимости двух и трехшаговых итераций Ньютоновского типа*, ЖВМиМФ **57**, сс. 1093–1102 (2017), Computational Mathematics and Mathematical Physics **57**, pp. 1090–1100 (2017).
18. S. Obeid, **O. Chuluunbaatar** and B.B. Joulakian, *(e, 2e) simple ionization of H₃⁺ by fast electron impact: use of triangular three-center continuum and bound state wave functions*, J. Phys. B **50**, pp. 145201–1–9 (2017).
19. A.A. Gusev, S.I. Vinitzky, **O. Chuluunbaatar**, V.L. Derbov, A. Gózdź, P.M. Krassovitskiy, *Transmission of clusters consisting of a few identical particles through barriers and wells*, Acta Physica Polonica B Proceedings Supplement **10**, pp. 269–274 (2017).
20. A. Galstyan, Yu.V. Popov, F. Mota-Furtado, P.F. O'Mahony, N. Janssens, S.D. Jenkins, **O. Chuluunbaatar**, and B. Piraux, *Modelling laser-atom interactions in the strong field regime*, Eur. Phys. J. D **71**, pp. 97–1–11 (2017).

21. A.A. Gusev, **O. Chuluunbaatar**, S.I. Vinitzky, V.L. Derbov, A. Gózdź, *Algorithms for solving the parametric self-adjoint 2d elliptic boundary-value problem using high-accuracy finite element method*, RUDN Journal of MIPh **25**, pp. 36–55 (2017).
22. A.A. Гусев, **О. Чулуунбаатар**, С.И. Веницкий, А. Гуждж, *Метод конечных элементов решения краевых задач для квантово-механических систем*, Вестник Российско-Армянского университета. Физико-математические и естественные науки **1**, сс. 12–25 (2017).
23. J. Gatzke, F. Navarrete, M. Ciappina, H. Gatzke, **O. Chuluunbaatar**, S.A. Zaytsev, A.A. Bulychev, K.A. Kouzakov, A. Galstyan, M. Waitz, H.-K. Kim, T. Bauer, A. Laucke, S. Eckart, G. Kastirke, J. Müller, M. Ritzer, E. Bloch, M. Richter, K. Fehre1, M. Kunitski, Ch. Müller, J. Voigtsberger, J. Rist, K. Pahl, M. Honig, M. Pitzer, M. Weller, I. Vela Pérez, J. Hoehl, G. Nalin, S. Grundmann, H. Maschkiwitz, C. Janke, S. Zeller, C. Goihl, Y. Herrman, D. Trabert, T. Jahnke, L.Ph.H. Schmidt, Yu.V. Popov, R. Dörner, R.O. Barrachina and M. S. Schöffler, *Single ionization of Helium at 0.5 - 2 MeV proton impact: On the quest for projectile coherence effects*, J. Phys. Conf. Ser. **875**, pp. 092006–1–1 (2017).
24. S.I. Vinitzky, A.A. Gusev, **O. Chuluunbaatar**, V.L. Derbov, P.M. Krassovitskiy, L.L. Hai, *Three-body scattering model: diatomic homonuclear molecule and atom in collinear configuration*, Proceedings of SPIE **10337**, pp. 103370J (2017).
25. T. Zhanlav, **O. Chuluunbaatar**, V. Ulziibayar, *Higher-order numerical solution of two-dimensional coupled Burgers' equations*, American Journal of Computational Mathematics **6**, pp. 120–129 (2016).
26. S.I. Vinitzky, A.A. Gusev, **O. Chuluunbaatar**, A. Gózdź, and V.L. Derbov, *The Coupled-channel method for modelling quantum transmission of composite systems*, Communications in Computer and Information Science. **678**, pp. 525–537 (2016).
27. A.A. Gusev, **O. Chuluunbaatar**, S.I. Vinitzky, L.L. Hai, V.L. Derbov, and P.M. Krassovitskiy, *Model of diatomic homonuclear molecule scattering by atom or barriers*, Communications in Computer and Information Science. **678**, pp. 511–524 (2016).
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29. A.A. Gusev, **O. Chuluunbaatar**, S.I. Vinitzky, L.L. Hai, V.L. Derbov, A. Gózdź, *Algorithms and programs for solving boundary-value problems for systems of second-order odes with piecewise constant potentials: multichannel scattering and eigenvalue problems*, Вестник РУДН: Серия Математика. Информатика. Физика. **3**, pp. 38–52 (2016).
30. A.A. Gusev, **O. Chuluunbaatar**, S.I. Vinitzky, V.L. Derbov, *Algorithms for solving the boundary-value problems for atomic trimers in collinear configuration using the kantorovich method*, Вестник РУДН: Серия Математика. Информатика. Физика. **4**, pp. 56–76 (2016).
31. A. Galstyan, **O. Chuluunbaatar**, A. Hamido, Yu.V. Popov, F. Mota-Furtado, P.F. O'Mahony, N. Janssens, F. Catoire and B. Piraux, *Erratum: Reformulation of the strong-field approximation for light-matter interactions [Phys. Rev. A 93, 023422 (2016)]*, Phys. Rev. **A 94**, pp. 029901(E)–1–1 (2016).
32. A.A. Gusev, V.P. Gerdt, L.L. Hai, V.L. Derbov, S.I. Vinitzky, **O. Chuluunbaatar**, *Symbolic-numeric algorithms for solving BVPs for a system of ODEs of the second order: multichannel scattering and eigenvalue problems*, Lecture Notes in Computer Science **9890**, pp. 212–227 (2016).
33. Z.N. Ozer, E. Ali, M. Dogan, M. Yavuz, O. Alwan, A. Naja, **O. Chuluunbaatar**, B.B. Joulakian, C.-G. Ning, J. Colgan, and D. Madison, *Comparison of experimental and theoretical triple differential cross sections for the single ionization of CO₂ ($1\pi_g$) by electron impact*, Phys. Rev. **A 93**, pp. 062707–1–6 (2016).

34. H. Gassert, **O. Chuluunbaatar**, M. Waitz, F. Trinter, H.-K. Kim, T. Bauer, A. Laucke, Ch. Müller, J. Voigtsberger, M. Weller, J. Rist, M. Pitzer, S. Zeller, T. Jahnke, L.Ph.H. Schmidt, J. B. Williams, S.A. Zaytsev, A. A. Bulychev, K.A. Kouzakov, H. Schmidt-Böcking, R. Dörner, Yu. V. Popov, and M. S. Schöffler, *Agreement of experiment and theory on the single ionization of helium by fast proton impact*, Phys. Rev. Lett. **116**, pp. 073201–1–6 (2016).
35. A. Galstyan, **O. Chuluunbaatar**, A. Hamido, Yu.V. Popov, F. Mota-Furtado, P.F. O'Mahony, N. Janssens, F. Catoire, and B. Piraux, *Reformulation of the strong-field approximation for light-matter interactions*, Phys. Rev. A **93**, pp. 023422–1–14 (2016).
36. А.А. Гусев, С.И. Виницкий, **О. Чулуунбаатар**, В.Л. Дербов, А. Гуждж, П.М. Красовицкий, *Метастабильные состояния составной системы при туннелировании через отталкивающие барьеры*, Теоретическая математическая физика **186**, сс. 27–50 (2016), Theoretical and Mathematical Physics **186**, 21–40 (2016).
37. S. Vinitzky, A. Gusev, **O. Chuluunbaatar**, V.L. Derbov, A.S. Zotkina, *On calculations of two-electron atoms in spheroidal coordinates mapping on hypersphere*, Proceedings of SPIE **9917**, pp. 99172Z (2016).
38. A.A. Gusev, L.L. Hai, **O. Chuluunbaatar**, S.I. Vinitzky, and V.L. Derbov, *Solution of boundary-value problems using Kantorovich method*, EPJ Web of Conferences **108**, pp. 02026–1–6 (2016).
39. A.A. Gusev, L.L. Hai, **O. Chuluunbaatar**, V. Ulziibayar, S.I. Vinitzky, V.L. Derbov, A. Gózdź, and V.A. Rostovtsev, *Symbolic-numeric solution of boundary-value problems for the Schrödinger equation using the finite element method: scattering problem and resonance states*, Lecture Notes in Computer Science **9301**, pp. 182–197 (2015).
40. O. Alwan, **O. Chuluunbaatar**, X. Assfeld, B.B. Joulakian, *Theoretical study of $(\gamma, 2e)$ photo-double ionization of CO_2 in the equal energy sharing regime using Dyson orbitals and the parameterized three center continuum wave function*, J. Phys. B **48**, pp. 185203–1–7 (2015).
41. T. Zhanlav, **O. Chuluunbaatar** and V. Ulziibayar, *Higher-order accurate numerical solution of unsteady Burgers' equation*, Applied Mathematics and Computation **250**, pp. 701–707 (2015).
42. H. Gassert, **O. Chuluunbaatar**, M. Waitz, H.-K. Kim, T. Bauer, A. Laucke, Ch. Müller, J. Voigtsberger, M. Weller, J. Rist, K. Pahl, M. Honig, M. Pitzer, S. Zeller, T. Jahnke, L.Ph.H. Schmidt, S.A. Zaytsev, A.A. Bulychev, H. Schmidt-Böcking, K.A. Kouzakov, R. Dörner, M.S. Schöffler and Yu.V. Popov, *Single ionization of helium by fast proton impact: Searching for projectile coherence*, J. Phys. Conf. Ser. **635**, pp. 022053–1–1 (2015).
43. Yu. V. Popov, A. Galstyan, **O. Chuluunbaatar**, S. Houamer, A.A. Bulychev, M.S. Schöffler, H.-K. Kim, J.N. Titze, T. Jahnke, L.Ph.H. Schmidt, H. Schmidt-Böcking, R. Dörner, *Charge transfer processes in proton-helium collisions: The validity of the first Born approximation*, J. Phys. Conf. Ser. **601**, pp. 012008–1–8 (2015).
44. T. Zhanlav, **O. Chuluunbaatar** and V. Ulziibayar, *A brief description of two-sided approximation for some Newton's type methods*, Математическое Моделирование **26**, сс. 71–77 (2014).
45. A.A. Gusev, **O. Chuluunbaatar**, S.I. Vinitzky, A.G. Abrashkevich, V.L. Derbov, *Numerical solution of elliptic boundary-value problems for Schrödinger-type equations using the Kantorovich method*, Mathematical Modelling and Geometry **2**, pp. 54–80 (2014).
46. A.A. Gusev, **O. Chuluunbaatar**, S.I. Vinitzky, A.G. Abrashkevich, *Algorithm for computing a wave packet evolution of the time-dependent Schrödinger equation*, Mathematical Modelling and Geometry **2**, pp. 33–53 (2014).
47. O. Alwan, **O. Chuluunbaatar**, X. Assfeld, A. Naja, B.B. Joulakian, *$(e, 2e)$ simple ionization of CO_2 by fast electron impact: use of three-center parameterized continuum wave function and Dyson orbitals*, J. Phys. B **47**, pp. 225201–1–7 (2014).

48. A.A. Gusev, **O. Chuluunbaatar**, S.I. Vinitzky and A.G. Abrashkevich, *KANTBP 3.0: New version of a program for computing energy levels, reflection and transmission matrices, and corresponding wave functions in the coupled-channel adiabatic approach*, Comput. Phys. Commun. **185**, pp. 3341–3343 (2014).
49. S.I. Vinitzky, A.A. Gusev, **O. Chuluunbaatar**, L.L. Hai, V.L. Derbov, P.M. Krassovitskiy, A. Gózdź, *Symbolic numerical algorithm for solving quantum tunneling problem of a diatomic molecule through repulsive barriers*, Lecture Notes in Computer Science **8660**, pp. 472–490 (2014).
50. A.A. Gusev, **O. Chuluunbaatar**, S.I. Vinitzky, V.L. Derbov, A. Gózdź, L.L. Hai, V.A. Rostovtsev, *Symbolic-numerical solution of boundary-value problems with self-adjoint second-order differential equation using the finite element method with interpolation Hermite polynomials*, Lecture Notes in Computer Science **8660**, pp. 138–154 (2014).
51. A.A. Gusev, **O. Chuluunbaatar**, S.I. Vinitzky and A.G. Abrashkevich, *POTHEA: A program for computing eigenvalues and eigenfunctions and their first derivatives with respect to the parameter of the parametric self-adjointed 2D elliptic partial differential equation*, Comput. Phys. Commun. **185**, pp. 2636–2654 (2014).
52. P. Bolognesi, B. Joulakian, A.A. Bulychev, **O. Chuluunbaatar** and L. Avaldi, *Photo-double-ionization of the nitrogen molecule*, Phys. Rev. **A 89**, pp. 053405–1–5 (2014).
53. A.A. Gusev, S.I. Vinitzky, **O. Chuluunbaatar**, A. Gózdź, V.L. Derbov, *Resonance tunnelling of clusters through repulsive barriers*, Physica Scripta **89**, pp. 054011–1–7 (2014).
54. T. Zhanlav, **O. Chuluunbaatar** and V. Ulziibayar, *Two-sided approximation for some Newton's type methods*, Applied Mathematics and Computation **236**, pp. 239–246 (2014).
55. M.S. Schöffler, H.-K. Kim, **O. Chuluunbaatar**, S. Houamer, A.G. Galstyan, J.N. Titze, T. Jahnke, L.Ph.H. Schmidt, H. Schmidt-Böcking, R. Dörner, Yu.V. Popov and A.A. Bulychev, *Transfer excitation reactions in fast proton-helium collisions*, Phys. Rev. **A 89**, pp. 032707–1–9 (2014).
56. A.A. Gusev, S.I. Vinitzky, **O. Chuluunbaatar**, L.L. Hai, V.L. Derbov and P.M. Krassovitskiy, *Resonant tunneling of the few bound particles through repulsive barriers*, Physics of Atomic Nuclei **77**, pp. 389–413 (2014); Ядерная Физика **77**, сс. 414–438 (2014).
57. A.A. Gusev, **O. Chuluunbaatar**, S.I. Vinitzky, A.G. Abrashkevich, *KANTBP 3.0: New version of a program for computing energy levels, reflection and transmission matrices, and corresponding wave functions in the coupled-channel adiabatic approach*, Вестник РУДН: Серия Математика. Информатика. Физика. **2**, pp. 39–46 (2014).
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59. T. Zhanlav, **O. Chuluunbaatar**, V. Ulziibayar, *A brief description of higher-order accurate numerical solution of Burgers' equation*, Вестник РУДН: Серия Математика. Информатика. Физика. **1**, pp. 86–91 (2014).
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63. S. Vinitzky, A. Gusev, **O. Chuluunbaatar**, L.L. Hai, V. Derbov, P.M. Krassovitskiy, *Models of quantum tunneling of a diatomic molecule affected by laser pulses through repulsive barriers*, Proceedings of SPIE **9031**, pp. 90311D–1–15 (2014).
64. S. Vinitzky, A. Gusev, **O. Chuluunbaatar**, V. Derbov, A. Klombotskaya, and A. Gózdź, *Models of two-electron composite quantum systems*, Proceedings of SPIE **9031**, pp. 90311E–1–14 (2014).
65. M.S. Schöffler, H.-K. Kim, **O. Chuluunbaatar**, S. Houamer, A.G. Galstyan, J.N. Titze, T. Jahnke, L.Ph.H. Schmidt, H. Schmidt-Böcking, R. Dörner, Yu.V. Popov and A.A. Bulychev, *Transfer excitation reactions in fast proton-helium collisions*, arXiv:1311.5660v2, pp. 1–21 (2014).
66. O.V. Belov, **O. Chuluunbaatar**, M.I. Kapralov, N.H. Sweilam, *A quantitative model of bacterial mismatch repair as applied to studying induced mutagenesis*, Physics of Particles and Nuclei, Letters **10**, pp. 587–596 (2013); Письма в ЭЧАЯ **10**, сс. 958–973 (2013).
67. V. Ulziibayar, T. Zhanlav, **O. Chuluunbaatar**, *Higher-order accurate numerical solution of Burgers' equation*, International Journal of Mathematical Sciences **33**, pp. 1374–1378 (2013).
68. M.S. Schöffler, **O. Chuluunbaatar**, S. Houamer, A.G. Galstyan, J.N. Titze, L.Ph.H. Schmidt, T. Jahnke, H. Schmidt-Böcking, R. Dörner, Yu.V. Popov, A.A. Gusev and C. Dal Cappello, *Two-dimensional electron-momentum distributions for transfer ionization in fast proton-helium collisions*, Phys. Rev. A **88**, pp. 042710–1–7 (2013).
69. A. Gusev, S. Vinitzky, **O. Chuluunbaatar**, V.A. Rostovtsev, L.L. Hai, V. Derbov and P. Krassovitskiy, *Symbolic-numerical algorithm for generating cluster eigenfunctions: tunneling of clusters through repulsive barriers*, Lecture Notes in Computer Science **8136**, pp. 427–442 (2013).
70. A. Gusev, S. Vinitzky, **O. Chuluunbaatar**, V.A. Rostovtsev, L.L. Hai, V. Derbov, A. Gozdz and E. Klimov, *Symbolic-numerical algorithm for generating cluster eigenfunctions: identical particles with pair oscillator interactions*, Lecture Notes in Computer Science **8136**, pp. 155–168 (2013).
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