

Publications

1. Sergeev A. V. and Sherstyuk A. I. (1982): *Higher orders and structure of perturbation-theory series for screened Coulomb potential*. Sov. Phys. - JETP **55**, 625.
2. Sergeev A. V. and Sherstyuk A. I. (1984): *High-order perturbation theory for the bound states of the Dirac equation with a Yukawa-type potential*. Sov. J. of Nucl. Phys. **39**, 731.
3. Sergeev A. V. (1986): *A recursive algorithm for Padé - Hermite approximations*. U. S. S. R. Comput. Maths. Math. Phys. **26**, 17.
4. Vainberg V. M., Mur V. D., Popov V. S. and Sergeev A. V. (1986): *Strong-field Stark effect*. Sov. Phys. - JETP Lett. **44**, 9.
5. Vainberg V. M., Mur V. D., Popov V. S. and Sergeev A. V. (1987): *Stark effect for the Rydberg states of the hydrogen atom*. Sov. Phys. - JETP Lett. **46**, 225.
6. Vainberg V. M., Mur V. D., Popov V. S. and Sergeev A. V. (1987): *The hydrogen atom in a strong electric field*. Sov. Phys. - JETP **66**, 258.
7. Vainberg V. M., Mur V. D., Popov V. S., Sergeev A. V. and Shcheblykin, A. V. (1988): *The $1/n$ -expansion in quantum mechanics*. Theor. Math. Phys. **74**, 269.
8. Mur V. D., Popov V. S., Sergeev A. V. and Shcheblykin, A. V. (1989): *Stark resonances and scaling in Rydberg atoms*. Sov. Phys. - JETP **69**, 49.
9. Sergeev A. V. (1989): *$1/N$ -expansion for the three-body problem*. Sov. J. of Nucl. Phys. **50**, 589.
10. Krepostnov P. I., Sergeev A. V. and Utkin A. B. (1989): *Optical properties of a dense xenon plasma in flashlamps*. Opt. Spectrosc. **64**, 315.
11. Mur V. D., Popov V. S., Sergeev A. V. (1990): *The $1/N$ -expansion in quantum mechanics*. Sov. Phys. - JETP **70**, 16.
12. Popov V. S., Mur V. D., Sergeev A. V. and Weinberg, V. M. (1990): *Strong-field Stark effect: perturbation theory and $1/n$ -expansion*. Phys. Lett. A **149**, 418.
13. Popov V. S., Mur V. D. and Sergeev A. V. (1990): *$1/n$ -expansion and scaling for the Stark effect in Rydberg atoms*. Phys. Lett. A **149**, 425.
14. Vainberg V. M., Popov V. S. and Sergeev A. V. (1990): *The $1/n$ -expansion for a hydrogen atom in external field*. Sov. Phys. - JETP **71**, 470.
15. Popov V. S., Mur V. D. and Sergeev A. V. (1991): *Quantization rules with barrier penetrability included*. J. Moscow Phys. Soc. **1**, 15.
16. Popov V. S., Mur V. D. and Sergeev A. V. (1991): *Quantization rules with allowance for barrier penetration*. Sov. Phys. - JETP **73**, 9.
17. Popov V. S., Mur V. D. and Sergeev A. V. (1991): *Quantization rules for quasistationary states*. Phys. Lett. A **157**, 185.
18. Popov V. S., Mur V. D. and Sergeev A. V. (1991): *Generalization of the Gamov formula to the multidimensional case*. Sov. Phys. - JETP Lett. **53**, 455.
19. Mur V. D., Popov V. S. and Sergeev A. V. (1991): *Generalization of the Gamov formula to the multidimensional case*. Sov. J. of Nucl. Phys. **54**, 575.
20. Sergeev A. V. (1991): *Positron-nucleus resonances in electric and magnetic fields*. Sov. J. of Nucl. Phys. **54**, 744.
21. Popov V. S., Sergeev A. V. and Shcheblykin A. V. (1992): *Structure of high orders of the $1/n$ -expansion*. Sov. Phys. - JETP **75**, 787.
22. Mur V. D., Popov V. S. and Sergeev A. V. (1992): *The $1/n$ -expansion in quantum mechanics and quasi-stationary states*. J. Mosc. Phys. Soc. **2**, 189.
23. Popov V. S. and Sergeev A. V. (1993): *Large orders of the $1/n$ -expansion in quantum mechanics*. Phys. Lett. A **172**, 193.
24. Popov V. S. and Sergeev A. V. (1993): *Asymptotic form of higher orders of the $1/n$ -expansion*. Sov. Phys. - JETP Lett. **57**, 281.
25. Popov V. S. and Sergeev A. V. (1994): *Asymptotic form of higher orders of the $1/n$ expansion for multidimensional problems*. Sov. Phys. - JETP **78**, 303.
26. Popov V. S., Mur V. D. and Sergeev A. V. (1994): *Critical fields and above-barrier Stark resonances*. Sov. Phys. - JETP Lett. **59**, 158.
27. Popov V. S., Sergeev A. V., Mur V. D. and Shcheblykin A. V. (1994): *On the asymptotics of high-order terms of the $1/n$ expansion*. Phys. At. Nucl. **57**, 1057.

28. Popov V. S., Mur V. D. and Sergeev A. V. (1994): *Theory of the Stark effect in a strong field: critical fields, above-barrier resonances, dependence on dimensionality*. Sov. Phys. - JETP **79**, 547.
29. Popov V. S., Mur V. D. and Sergeev A. V. (1994): *Critical electric fields and Stark resonances in the hydrogen atom*. Physics Letters A **193**, 159.
30. Popov V. S. and Sergeev A. V. (1994): *Large orders of $1/n$ -expansion for multidimensional problems*. Physics Letters A **193**, 165.
31. Sergeev A. V. (1995): *Summation of the eigenvalue perturbation series by multi-valued Padé approximants: application to resonance problems and double wells*. J. Phys. A: Math. Gen. **28**, 4157.
32. Mur V. D., Popov V. S. and Sergeev A. V. (1996): *Coulomb corrections to nuclear scattering lengths and effective ranges for weakly bound systems*. Phys. At. Nucl. **59**, 62.
33. Mur V. D., Popov V. S. and Sergeev A. V. (1996): *Coulomb corrections to scattering lengths and effective ranges for l [not equal] 0*. Phys. At. Nucl. **59**, 1888.
34. Popov V. S. and Sergeev A. V. (1996): *Effect of a magnetic field on the ionization of atoms*. Sov. Phys. - JETP Letters **63**, 417.
35. Sergeev A. V. and Goodson D. Z. (1998): *Semiclassical self-consistent-field perturbation theory for the hydrogen atom in a magnetic field*. Int. J. Quant. Chem., **69**, 183.
36. Sergeev A. V. and Goodson D. Z. (1998): *Self-consistent-field perturbation theory of molecular vibrations*. Molec. Phys. **93**, 477.
37. Sergeev A. V. and Goodson D. Z. (1998): *Summation of asymptotic expansions of multiple-valued functions using algebraic approximants: application to anharmonic oscillators*. J. Phys. A: Math. Gen. **31**, 4301.
38. V. S. Popov and A. V. Sergeev (1998): *Ionization of atoms in weak fields and the asymptotic behavior of higher-order perturbation theory*. Sov. Phys. - JETP **86**, 1122.
39. M. O. Elout, D. Z. Goodson, C. D. Elliston, S.-W. Huang, A. V. Sergeev, and Watson D. K. (1998): *Improving the convergence and estimating the accuracy of summation approximants of $1/D$ expansions for Coulombic systems*. J. Math. Phys. **39**, 5112.
40. D. Z. Goodson and A. V. Sergeev (1999): *On the use of algebraic approximants to sum divergent series in vibrational spectroscopy*. J. Chem. Phys. **110**, 8205.
41. A. V. Sergeev and S. Kais (1999): *Critical nuclear charges for N -electron atoms*. Int. J. Quant. Chem. Symp. **75**, 533.
42. A. V. Sergeev and S. Kais (1999): *Variational principle for critical parameters of quantum systems*. J. Phys. A: Math. Gen. **32**, 6891.
43. A. V. Sergeev and S. Kais (2001): *Resonance states of atomic anions*. Int. J. Quant. Chem. **82**, 255.
44. A. V. Sergeev and B. Segev (2002): *Most probable path in phase space for a radiationless transition in a molecule*. J. Phys. A: Math. Gen. **35**, 1769.
45. Kallush S., Segev B., Sergeev A. V., and Heller E. J. (2002): *Surface jumping: Franck - Condon factors and Condon points in phase space*. J. Phys. Chem. A **106**, 6006.
46. Heller E. J., Segev B., and Sergeev A. V. (2002): *Hopping and jumping between potential energy surfaces*. J. Phys. Chem. B **106**, 8471.
47. Segev B. and Sergeev A. V. (2003): *Dominant channels of vibronic transitions in molecules with several identical modes*. Chem. Phys. Lett. **367**, 382.
48. Sergeev A. V. and Segev B. (2003): *Semiclassical estimation of Franck - Condon factors and transition rates for vertical and nonvertical transitions*. J. Chem. Phys. **118**, 5852.
49. Goodson D. Z. and Sergeev A. V. (2004): *Singularity structure of Møller - Plesset perturbation theory*. Adv. Quant. Chem., **47**, 193.
50. Sergeev A. V., Goodson D. Z., Wheeler S. E., and Allen W. D. (2005): *On the nature of the Møller - Plesset critical point*. J. Chem. Phys. **123**, 064105.
51. Goodson D. Z., Sergeev A. V. (2006): *Singularity analysis of fourth-order Møller - Plesset perturbation theory*, Physics Letters A, Physics Letters A 359, 481.
52. Sergeev A. V., Goodson D. Z. (2006): *Singularities of Møller - Plesset energy functions*, J. Chem. Phys. **124**, 094111.
53. Sergeev A. V., Herman M. F. (2006): *An analysis of the accuracy of an initial value representation surface hopping wave function in the interaction and asymptotic regions*, J. Chem. Phys. **125**, 024107.
54. Herman M. F. , Sergeev A. V. (2006): *Using an r -dependent Gaussian width in calculations of the globally uniform semiclassical wave functions*, J. Chem. Phys. **126**, 034104.
55. A. Svidzinsky, G. Chen, S. Chin, M. Kim, D. Ma, R. Murawski, A. Sergeev, M. Scully, and D. Herschbach (2008): *Bohr model and dimensional scaling analysis of atoms and molecules*. Intern. Rev. Phys. Chem. **27**, 665.