

Few-Body Systems Group (Sector 11) at BLTP, JINR

2006 Annual Activity Report

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Few-Body Systems Group (Sector 11) at [BLTP](#), [JINR](#) ([Dubna](#))

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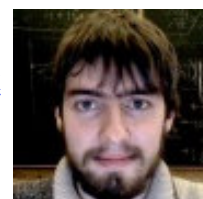


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2 Publications

2.1 Journal publications

1. J. Ahrens, . . . , S. Kamalov, *et al.*, “Measurement of the helicity dependence for the $\gamma p \rightarrow n\pi^+$ channel in the second resonance region,” *Phys. Rev. C* **74**, 045204-10 (2006).
2. Yu. V. Artemova, G. S. Bisnovaty-Kogan, I. V. Igumenshev, and I.D.Novikov, “Black hole advective accretion disks with optical depth transition”, *Astrophys. J.* **364**, 968–977 (2006).
3. V. B. Belyaev, N. V. Shevchenko, A. I. Fix, and W. Sandhas, “Binding of charmonium with two- and three-body nuclei”, *Nucl.Phys A* **780**, 100–111 (2006).
4. G. S. Bisnovaty-Kogan, “Binary and recycled pulsars: 30 years after observational discovery”, *UFN* **176**, 59–75 (2006).
5. G. S. Bisnovaty-Kogan, “Checking the variability of the gravitational constant with binary pulsars”, *Int. J. Mod. Phys. D* **15**, 1047–1051 (2006).
6. G. S. Bisnovaty-Kogan, “Cosmic γ -ray bursts: Observations and modeling”, *Fiz. Elem. Chast. Atom. Yadra* **37**, 1235–1284 (2006).
7. D. Dimitrovski and E. A. Solov’ev, “Ionization of negative ions and atoms by electric pulses: zigzag dependence on pulse duration”, *J. Phys. B* **39**:4, 895–903 (2006).
8. D. Elsner, . . . , S. Kamalov, *et al.*, “Measurement of the LT-asymmetry in π^0 electroproduction at the energy of the $\Delta(1232)$ resonance,” *Eur. Phys. J. A* **27**, 91-97 (2006).
9. O. I. Kartavtsev and A. V. Malykh, “Universal low-energy properties of three two-dimensional particles”, *Phys. Rev. A* **74**, 042506-14 (2006).
10. J. I. Kim, V. S. Melezhik, and P. Schmelcher, “Suppression of quantum scattering in strongly confined systems”, *Phys. Rev. Lett.* **97**, 193203-4, 2006.
11. E. A. Kolganova, A. K. Motovilov, and W. Sandhas, “Scattering length for helium atom-diatom collision”, *Few-Body Syst.* **38**, 205–208 (2006).
12. E. A. Kolganova, A. K. Motovilov, and W. Sandhas, “Scattering length for atom-diatom scattering at ultra-low energies”, *Czech. J. Phys.* **56**, C287–C290 (2006).
13. S. G. Moiseenko, G.S.Bisnovaty-Kogan, and N. V. Ardeljan, “Magnetorotational core collapse model with jets”, *Month. Not. Royal Astron. Soc.* **370**, 501–512 (2006).
14. A. K. Motovilov, “Explicit representations for the T-matrix on unphysical energy sheets and resonances in two- and three-body systems”, *Few-Body Syst.* **38** (2006), 115-120.
15. A. K. Motovilov and A. V. Selin, “Some sharp norm estimates in the subspace perturbation problem”, *Int. Eq. Oper. Th.* **56**, 511–542 (2006).
16. V. V. Pupyshev, “Spurious solutions of the three-dimensional Faddeev equations”, *Theor. Math. Phys.* **142**:2, 1067–1080 (2006).

17. V. V. Pupyshev, “Spectrum and collapse of a particle in the field proportional of the squared secant of distance”, *Phys. Part. Nucl., Letters* **3**, 72–81 (2006)
18. V. V. Pupyshev, “Spectrum and collapse of a particle in a nonlocal field of centrifugal type”, *Phys. Part. Nucl., Letters* **3**, 82–91 (2006)
19. J. Révai and N. Shevchenko, “Capture of slow antiprotons by helium atoms”, *Eur. Phys. J. D* **37**, 83–92 (2006).
20. V. V. Sokolov, G. S. Bisnovaty-Kogan, V. G. Kurt, *et al.*, “Observational constraints on the angular and spectral distributions of photons in gamma-ray burst sources”, *Astronomy Reports*, **50**, 612–625 (2006).

2.2 Articles accepted for publication

1. S. Albeverio and A. K. Motovilov, “Operator integrals with respect to a spectral measure and solutions to some operator equations”, *Fundam. Appl. Math.* (accepted).
2. S. Albeverio, A. K. Motovilov, and A. V. Selin, “The *a priori* $\tan \theta$ theorem for eigenvectors”, *SIAM J. Matr. Anal. Appl.* (accepted).
3. G. S. Bisnovaty-Kogan and M. Merafina, ”Selfgravitating gas spheres in a box and relativistic clusters: relation between dynamical and thermodynamical stability”, *Astrophys. J.* (accepted); *arXiv: astro-ph/0603398*.
4. E. A. Kolganova, A. K. Motovilov, and W. Sandhas, “Ultracold scattering processes in three-atomic helium systems”, *Nucl. Phys. A* (accepted).
5. V. Kostykin, K. A. Makarov, and A. K. Motovilov, “Perturbation of spectra and spectral subspaces”, *Trans. Amer. Math. Soc.* **359**:1, 77–89 (2007).

2.3 Articles in paper collections/conference proceedings

1. M. Khankhasayev, R. Herndon, J. Moerlins and Chr. Teaf, “Overview of NATO/CCMS Pilot Study on Environmental Decision-Making for Sustainable Development in Central Asia”, In Proc.: Environmental Security and Sustainable Land Use: With Special Reference to Central Asia, NATO Security through Science Series, Sub-Series C: Environmental Security, v.7, Eds. H. Vogtmann and N. Dobretsov, Springer; pp. 65-84, 2006.

2.4 Preprints and data bases

1. V. B. Belyaev, M. Tater, and E. Truhlik, “Influence of protons on the capture of electrons by the nuclei of ${}^7\text{Be}$ in the Sun”, *arXiv: astro-ph/0606679*.
2. G. S. Bisnovaty-Kogan, “Binary and recycled pulsars: 30 years after observational discovery”, *arXiv: astro-ph/0611398*.
3. O. I. Kartavtsev and A. V. Malykh, “Low-energy three-body dynamics in binary quantum gases”, *arxiv: physics/0606013*.

4. S. G. Moiseenko, G. S. Bisnovatyi-Kogan, and N. V. Ardeljan, “Magnetorotational supernovae with jets”, *arXiv: astro-ph/0603789*.
5. L. Tiator and S. Kamalov, “MAID analysis techniques”, *arXiv: nucl-th/0603012*.
6. L. Tiator and S. Kamalov, “Nucleon resonance excitation with virtual photons”, *arXiv: nucl-th/0610113*.
7. S. N. Yang, G. Y. Chen, and S. S. Kamalov, “A meson-exchange πN model up to energies $W < 2.0$ GeV”, *arXiv: nucl-th/0610076*.

2.5 Conference presentations

1. V. B. Belyaev, “Finite-rank approximation approach to few-body problems”, International Summer School on Few-Body Problems in Physics (7–17 August 2006, Dubna, Russia).
2. V. B. Belyaev and I. I. Shlyk, “New possible approach to the treatment of three charged particles”, The 18-th International IUPAP Conference on Few-Body Problems in Physics (21–26 August, 2006, Santos, Brazil).
3. G. S. Bisnovatyi-Kogan, “Magnetorotational core-collapse supernovae: explosion and jet formation”, Vulcano Workshop 2006 ”Frontier Objects in Astrophysics and Particle Physics” (22–27 May, 2006, Vulcano, Italy).
4. G. S. Bisnovatyi-Kogan, “Recycled binary pulsars: the best laboratory for fundamental physics”, Vulcano Workshop 2006 ”Frontier Objects in Astrophysics and Particle Physics” (22–27 May, 2006, Vulcano, Italy).
5. G. S. Bisnovatyi-Kogan, “Recycled binary pulsars - a most precise laboratory of fundamental physics”, Gamow summer astronomical school: “Astronomy on the border of sciences — astrophysics, cosmology, radioastronomy, astrobiology” (1–5 August 2006, Odessa, Ukraine).
6. G. S. Bisnovatyi-Kogan, “Binary recycled pulsars, as a most precise physical laboratory”, Fourth scientific conference in honor of Bohdan Babiy (1936-1993) “Selected Issues of Astronomy and Astrophysics” (19–21 October 2006, Lviv, Ukraine).
7. D. Dimitrovski, J. Pop-Jordanov, and E.A.Solov’ev, “Quantum transitions in neuronal induced by EEG signal as an information transfer mechanism”, International Course and Conference “Mind and Brain V: Physics and the Brain” (17–23 September 2006, Dubrovnik, Croatia).
8. M. Khankhasayev and S. Leitman, “Main results, conclusions & recommendations from the NATO/CCMS Pilot Study Meeting on Transboundary Water Management Issues in the United States & Central Asia (March 2005, Tallahassee, Florida). Central Asian Pilot Study: A Five Year Historical Perspective”, Presented at the NATO Advanced Research Workshop on Facilitating Regional Security through Improved Management of Transboundary Water Basin Resources (22–22 June, 2006, Almaty, Kazakhstan).
9. E. A. Kolganova, “Helium trimers at ultra-low energies”, The XIIth International Conference on Symmetry Methods in Physics (03–08 July, 2006, Yerevan, Armenia).

10. E. A. Kolganova, A. K. Motovilov, and W. Sandhas, “Ultracold scattering process in three-atomic helium systems”, The 18-th International IUPAP Conference on Few-Body Problems in Physics (21–26 August 2006, Santos, Brazil).
11. A. K. Motovilov, “Four-body differential Yakubovsky equations”, International Summer School on Few-Body Problems in Physics (7–17 August 2006, Dubna, Russia).
12. A. K. Motovilov, “Three-body resonances”, International Summer School on Few-Body Problems in Physics (7–17 August 2006, Dubna, Russia).
13. A. K. Motovilov and A. V. Selin, “Some sharp norm estimates in the subspace perturbation problem”, The 8th Workshop on Numerical Ranges and Numerical Radii (15–17 July 2006, Bremen, Germany).
14. E. A. Soloviev, “Adiabatic approach in quantum theory”, International Summer School on Few-Body Problems in Physics (7–17 August 2006, Dubna, Russia).
15. L. Tiator and S. Kamalov, “Nucleon resonance excitation with virtual photons”, Workshop on the Shape of Hadrons (27–29 April 2006, Athens, Greece).
16. S. N. Yang, G. Y. Chen and S. S. Kamalov, “A meson-exchange πN model up to energies $W < 2.0$ GeV,” The 18-th International IUPAP Conference on Few-Body Problems in Physics (21–26 August 2006, Santos, Brazil).

3 Visits

3.1 Conferences, schools

1. V. B. Belyaev, The 18-th International IUPAP Conference on Few-Body Problems in Physics (21–26 August 2006, Santos, Brazil).
2. G. S. Bisnovatyi-Kogan, Vulcano Workshop 2006 ”Frontier Objects in Astrophysics and Particle Physics” (22–27 May, 2006, Vulcano, Italy).
3. G. S. Bisnovatyi-Kogan, Gamow summer astronomical school: “Astronomy on the border of sciences - astrophysics, cosmology, radioastronomy, astrobiology” (1 – 5 August 2006, Odessa, Ukraine).
4. G. S. Bisnovatyi-Kogan, Fourth scientific conference in honor of Bohdan Babiy (1936–1993) “Selected Issues of Astronomy and Astrophysics” (19 – 21 October 2006, Lviv, Ukraine).
5. G. S. Bisnovatyi-Kogan, Galitski International School on Theoretical Physics (25 May –2 June 2006, MEPhI camp “VOLGA”).
6. G. S. Bisnovatyi-Kogan, XIII Workshop on Nuclear Astrophysics (3 – 8 April 2006, Ringberg Castle, Tegensee, Germany).
7. G. S. Bisnovatyi-Kogan, MEPhI Scientific session 2006 (23 – 27 January 2006, Moscow).
8. G. S. Bisnovatyi-Kogan, Fifth Stromlo Symposium “Disks, winds and jets — from planets to quasars” (3 – 8 December 2006, Mt. Stromlo Observatory in Canberra, Australia).

9. G. S. Bisnovatyi-Kogan, XXIII Texas Symposium on Relativistic Astrophysics (11 – 15 December 2006, Melbourne, Australia).
10. G. S. Bisnovatyi-Kogan, Helmholtz International Summer School on Dense Matter in Heavy Ion Collisions and Astrophysics (21 August – 01 September 2006, Dubna, Russia).
11. G. S. Bisnovatyi-Kogan, Advanced Summer School on Modern Mathematical Physics: Theoretical cosmology (3 – 12 September 2006, Dubna, Russia).
12. E. A. Kolganova, The XIIth International Conference on Symmetry Methods in Physics (03 – 08 July 2006, Yerevan, Armenia).
13. E. A. Kolganova, The XXXIIIth International Conference on High Energy Physics (26 July – 2 August 2006, Moscow, Russia).
14. A. V. Malykh, XVIIIth Indian-Summer School “Strangeness and Hypernuclei” (2 – 9 October 2006, NPI, Řež, Czech Republic).
15. A. K. Motovilov, The 8th Workshop on Numerical Ranges and Numerical Radii (15 – 17 July 2006, Bremen, Germany).

3.2 Collaboration visits

1. V. B. Belyaev, Physics Institute, Bonn University, Bonn, Germany, 11.11.2006 – 25.12.2006.
2. S. S. Kamalov, National Taiwan University, Taipei, Taiwan, 15.02.2006–01.06.2006.
3. S. S. Kamalov, Institute of Nuclear Physics, Mainz University, Mainz, Germany, 30.08.2006–30.10.2006.
4. E. A. Kolganova, Physics Institute, Bonn University, Bonn, Germany, 17.04.2006–29.04.2006.
5. E. A. Kolganova, Physics Institute, Bonn University, Bonn, Germany, 03.09.2006–28.09.2006.
6. E. A. Kolganova, Physics Institute, Bonn University, Bonn, Germany, 28.11.2006–21.12.2006.
7. A. V. Matveenko, KEK and University of Shizuoka, Japan, 02.03.2006–30.03.2006.
8. A. V. Matveenko, Institute of Physics, Mainz University, Mainz, Germany, 25.04.2006–14.05.2006.
9. A. V. Matveenko, Institute of Physics, Mainz University, Mainz, Germany, 02.10.2006–16.10.2006.
10. A. V. Matveenko, Institute of Physics, Politehnika, Wroclaw, Poland, 13.11.2006–28.11.2006.
11. V. S. Melezhik, Heidelberg University, Heidelberg, Germany, 10.06.2006–05.08.2006.
12. A. K. Motovilov, Physics Institute, Bonn University, Bonn, Germany, 20.05.2006–19.07.2006.
13. A. K. Motovilov, Institute for Applied Mathematics, Bonn University, Bonn, Germany, 16.10.2006–15.11.2006.

14. I. I. Shlyk, Physics Institute, Bonn University, Bonn, Germany, 1.06.2006–15.06.2006.
15. E. A. Solov'ev, Physics Institute, Zemun, Belgrade, Serbia, 1.10.2006–31.12.2006.

4 Visitors

1. E. O. Alt, Mainz University, Germany, 07.08.2006–17.08.2006.
2. C. Cacciapuoti, Institute for Applied Mathematics, Bonn University, Bonn, Germany, 05.08.2006–21.08.2006.
3. D. Finco, Institute for Applied Mathematics, Bonn University, Bonn, Germany, 05.08.2006–21.08.2006.
4. J. Revai, Theoretical Physics Department, KFKI, Budapest, Hungary, 6.08.2006 – 17.08.2006.
5. W. Sandhas, Physics Institute, Bonn University, Bonn, Germany, 28.07.2006–14.08.2006.
6. W. Sandhas, Physics Institute, Bonn University, Bonn, Germany, 28.11.2006–06.12.2006.
7. N. V. Shevchenko, Nuclear Physics Institute, Řež, Czech Republic 6.08.2006–17.08.2006.