

Roman Shcherbakov

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EDUCATION

Harvard University, Astronomy Department, Cambridge, MA, USA.

Degree: Philosophy Doctor (expected 6/2011).

Degree: Master of Arts (06/2008).

GPA: 3.96 out of 4.00.

Moscow Institute of Physics and Technology (MIPT), Dolgoprudny, Russia.

Degree: Master of Applied Mathematics and Physics with Honors (06/2007).

Thesis: "Magnetized spherically symmetric flows".

GPA: 4.00 out of 4.00.

Moscow Institute of Physics and Technology, Dolgoprudny, Russia.

Degree: Bachelor of Applied Mathematics and Physics with Honors (06/2005).

Thesis: "Some Techniques for Solving the Hydrodynamic Problems by the Example of Axisymmetric Bondi-Hoyle Accretion".

GPA: 3.97 out of 4.00.

PUBLICATIONS (Refereed)

1. Shcherbakov R., "Dispersion of waves in relativistic plasmas with isotropic particle distributions", **Physics of Plasmas**, 16, 032104 (2009)
2. Shcherbakov R., "Propagation effects in magnetized transrelativistic plasmas", **ApJ**, 688, pp. 695-700 (2008)
3. Shcherbakov R., "Spherically Symmetric Accretion Flows: Minimal Model with MHD Turbulence", **ApJS**, 177, pp. 493-514 (2008)
4. Shcherbakov R., "Region of Anomalous Compression under Bondi-Hoyle Accretion", **Astronomy Letters**, 31, pp. 591-597 (2005)

PROFESSIONAL MEMBERSHIPS/SERVICES

Referee: Int. J. Physical Sciences, New Astronomy

2007 – AAS member

CONFERENCE PRESENTATIONS & PUBLICATIONS

- "Inflow-outflow solution with stellar winds and conduction near Sgr A*" contributed talk at "Galactic Center Workshop 2009", Shanghai, China, October 19-23, 2009
- "Constraining the Accretion Flow in Sgr A* by GR Dynamical and Radiative Modeling" poster at "Galactic Center Workshop 2009", Shanghai, China, October 19-23, 2009
- "Constraining the Black Hole Parameters and the Accretion Flow in Sagittarius A* by GR Dynamical and Radiative Modeling" poster at AAS meeting, Long Beach, USA, January 4-8, 2009.
- "Self-consistent Modeling of Accretion with Magnetohydrodynamic Turbulence" poster at "Magnetic Field Generation in Experiments, Geophysics and Astrophysics", Santa Barbara, USA, July 14-18, 2008.
- "Dynamics of Magnetized Spherical Accretion Flows" solicited talk and paper in AIP proceedings, "Astrophysics of Compact Objects", HuangShan, China, July 1-7, 2007.
- "Some New Semi-Analytical Approaches to Axially Symmetric Hydrodynamic Flows" talk at "Scientific Conference", MIPT, section of "Problems of Physics and Astrophysics", November 26-27, 2005.
- "Region of Anomalous Compression in Bondi-Hoyle Accretion" poster at "Physics of Neutron stars", St. Petersburg, Russia, June 27-29, 2005.

RESEARCH INTERESTS

- Magneto Hydrodynamics (MHD): MHD turbulence, dynamo action and mean field approach
- Plasma physics: plasma waves, plasma turbulence, radiative transfer of electromagnetic waves.
- Applications of all above to Astrophysical Phenomena: accretion onto black holes (physically thin and thick flows), star formation.

RESEARCH AND WORK EXPERIENCE

- Research work (including summer research) on semi-analytic approaches to magnetized accretion at Harvard University, Astronomy Department. Development of theoretical models and solving techniques.
- Research work concerning hydrodynamics in astrophysics at the “Chair of problems of Physics and Astrophysics”, Tamm Theory Division, Lebedev Physical Institute. Development and application of analytical approaches and hydrodynamics numerical shock-capturing code.
- Summer School on Theoretical and Observational Astrophysics, Special astrophysics observatory (SAO), Nizhniy Arhyz, Russia, June 26-July 3, 2004.
- Author of shareware entertainment software “Beyond the Invisible”, evaluating the coin guessing skill of people.

ACADEMIC HONORS, COMPETITIONS AND AWARDS

2008-2010	NASA Earth and Space Science Fellowship.
2006-2008	Philip Putnam Chase Memorial Fellowship.
2004-2006	Fellowship of the Russian Foundation for Basic Research (RFBR) № 05-02-17700 for research in Astrophysics.
2004, 2005	Best presentations at XLVII and XLVIII Scientific Conferences at MIPT.
2002, 2003, 2004, 2005	MIPT Physics Olympiad for Undergraduate Students, absolute winner (1-st of about 2000 students).
2001	Fellowship of the major of the Leningradskaya region.
2001	Prometey Star, Award of the Cultural and Science figures of Saint-Petersburg for Remarkable Success in Science.
2001	Gold medal for Extraordinary Success in Study.
2000-2001	Candidate for the National Russian Team to International Physics Olympiad, (Turkey, 2001), 7-th final rank of 18 candidates, winners of Final (V-th) stage of Russian Physics Olympiad.
2001	Final stage of Russian National Physics Olympiad, II-d place.
2000	Final stage of Russian National Physics Olympiad, I-st place.
1997-2001	Winner of numerous Russian National Physics (up to V-th stage including), Mathematics (up to III-d inc.), Computer Science (up to II-d inc.) and Chemistry (up to III-d inc.) Olympiads.

TEACHING EXPERIENCE

2009, Spring	Teaching Fellow for Astronomy 219 course.
2008, Spring	Teaching Fellow for Astronomy 145 course.
2007	Organization of CfA Research Forum, Astronomy 301hf course.
2007, Fall	Teaching Fellow for Science A-47 core undergraduate course.
2005, 2006	Training the National Russian Team to International Junior Science Olympiad, devising the problem sets for qualifying competitions, conducting the qualifying competitions, giving the lectures on technique of physical experiments and mathematics to the candidates.
2001-2006	Training the National Russian Team for International Physics Olympiads, conducting the qualifying competitions, giving the lectures to high school students.

- 2003, 2004, 2005, 2006** Member of the jury at Final (V-th) stage of Russian Physics Olympiads in, accordingly, Voronezh, Yaroslavl, Kovylkino, Snezhinsk.
- 2004, 2005** Representative of the central methodical committee of Russian Physics Olympiads at Federal District (IV-th) stage of Physics Olympiads in Vladivostok, Khabarovsk.
- 2002-Present** Member of the central methodical committee of Russian Physics Olympiads, author of some competition problems.
- 2001-2006** Individual tutor for physics and mathematics.

CONFERENCE PARTICIPATION

- 2005** “Physics for Tomorrow”, Launch Conference of the International year of physics, UNESCO headquarters, Paris, January 13-15, member of Russian delegation.
- 2005** “International Conference on Theoretical Physics”, Lebedev Physical Institute, Moscow, April 11-16.
- 2004** “Scientific problems of current importance”, Zelenograd, October, 26-31.
- 2004** “Scientific Conference”, MIPT, section of the “Problems of Physics and Astrophysics”, November 26-27.

COMPUTER SKILLS

- Expert in Mathematica 7.0 system.
- Advanced Delphi, C++ programming.
- Some experience in Maple 11, Matlab 2008a.
- Some experience in HTML, Assembler, FORTRAN, Perl programming.

OTHER INTERESTS AND HOBBIES

- Sports:** Running, Cross-country skiing (III-d professional level at 10km), Alpine skiing, Table Tennis, Tennis.
- Hobbies:** Regular jogging 12km, Latin Dancing (salsa etc.)