CURRICULUM VITAE

Dmitry Roldugin, PhD.

Affiliation and official address:
Senior researcher
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Date and place of birth: December 17, 1986, Lipetsk, Russia

Education

M.Sc., 2010 from the Moscow Institute of Physics and Technology
Ph.D. (in Physics and Mathematics), 2013 from the Keldysh Institute of Applied Mathematics of Russian Academy of Sciences, thesis "Study of small satellite magnetic attitude control system accuracy and time-response"

Career/Employment

(February 2016-till present) Senior Researcher at the Keldysh Institute of Applied Mathematics of Russian Academy of Sciences
(January 2014-January 2016) Researcher at the Keldysh Institute of Applied Mathematics of Russian Academy of Sciences
(January 2013-December 2014) Junior Researcher at the Keldysh Institute of Applied Mathematics of Russian Academy of Sciences
(July 2013-November 2013) Postdoctoral Fellow at the University of Beira Interior, Beira, Portugal
(2008-2012) Junior Researcher at the Keldysh Institute of Applied Mathematics of Russian Academy of Sciences (part-time)
(2010-2013) PhD student at Moscow Institute of Physics and Technology
(2004-2010) student at Moscow Institute of Physics and Technology

Specialization

Spaceflight dynamics, attitude motion, active and passive magnetic attitude control of spacecraft, sliding control, large space structures; remote sensing of the Earth, hyperspectral applications

Main projects:

- (2012-2021) Scholarship of the Russian Federation President;
- (2015-2016) Grant of the Russian Foundation for Basic Research for leading young research groups, PI;
- (2020) Contract with JC "VNIIEM Corporation", PI;
- (2020) Contract with "Sputnix" Llc, PI;
- (2017-2019) Contract with JSC "Academician M.F. Reshetnev Information Satellite Systems", PI;
- (2012-2013) Grant of the Ministry of Education and Science of Russian Federation, PI

Awards

- Moscow government award for young scientists, 2015;
- Best student paper award at the 9th IAA Symposium “Small satellites for Earth observation”, Berlin, 2013l and at the 1st IAA Conference on dynamics and control of space systems, Porto, 2012;
- Keldysh medal of KIAM for best junior scientist, 2013 and 2011

Publications:

- Number of papers in refereed journals: 29
- WoS h-index: 10
- Total number of publications: 124
- Patents: 1
- Computer program certificates: 8

Selected peer-reviewed journal articles:

1. A.D. Guerman, D.S. Ivanov, D.S. Roldugin, S.S. Tkachev, A.S. Okhitina, Orbital and angular dynamics analysis of the small satellite SAR mission INFANTE // **Cosmic Research**, 2020, V. 58, N 3, pp. 206-217.
2. M.Yu. Ovchinnikov, V.I. Penkov, D.S. Roldugin, S.S. Tkachev, Single axis stabilization of a fast rotating satellite in the orbital frame using magnetorquers and a rotor // **Acta Astronautica**, 2020, V. 173, pp. 195-201.
3. D.S. Ivanov, U. Monakhova, A.D. Guerman, M.Yu. Ovchinnikov, D.S. Roldugin, Decentralized differential drag based control of nanosatellites swarm spatial distribution using magnetorquers **// Advances in Space Research**, 2021, V. 67, N. 11, pp. 3489-3503.
4. M.Yu. Ovchinnikov, D.S. Roldugin, A survey on active magnetic attitude control algorithms for small satellites // **Progress in Aerospace Sciences**, 2019, V. 109, article 100546.
5. D.S. Ivanov, M.Yu. Ovchinnikov, D.S. Roldugin, Three-axis attitude determination using magnetorquers // **Journal of Guidance, Control and Dynamics**, 2018, V. 41, N 11, pp. 2455-2462.
6. M.Yu. Ovchinnikov, V.I. Penkov, D.S. Roldugin, A.V. Pichuzhkina, Geomagnetic field models for satellite angular motion studies // **Acta Astronautica**, 2018, V. 144, pp. 171-180.
7. M.Yu. Ovchinnikov, D.S. Roldugin, S.S. Tkachev, V.I. Penkov, B-dot algorithm steady-state motion performance // **Acta Astronautica**, 2018, V. 146, pp. 66-72.
8. M.Yu. Ovchinnikov, D.S. Roldugin, V.I. Penkov, R. Varatharajoo, V.S. Ryabikov, Motion of a satellite equipped with a pitch flywheel and magnetic coils in gravitational field // **Cosmic Research**, 2017, V. 55, № 3, pp. 207-213.
9. D.S. Ivanov, M.Yu. Ovchinnikov, V.I. Penkov, D.S. Roldugin, D.M. Doronin, A.V. Ovchinnikov, Advanced numerical study of the three-axis

magnetic attitude control and determination with uncertainties // **Acta Astronautica**, 2017, V. 132, pp. 103-110.
10. M.Yu. Ovchinnikov, S.S. Tkachev, D.S. Roldugin, A.B. Nuralieva, Y.V. Mashtakov, Angular motion equations for a satellite with hinged flexible solar panel // **Acta Astronautica**, 2016, V. 128, pp. 534-539
11. M.Yu. Ovchinnikov, D.S. Roldugin, V.I. Penkov, S.S. Tkachev, Y.V. Mashtakov, Fully magnetic sliding mode control for acquiring three-axis attitude // **Acta Astronautica**, 2016, V. 121, pp. 59-62.
12. M.Yu. Ovchinnikov, V.I. Penkov, D.S. Roldugin, A.D. Guerman, Active magnetic attitude control system providing three-axis inertial attitude // **Advances in the Astronautical Sciences**, 2015, V. 153, pp. 259-272.
13. M.Yu. Ovchinnikov, D.S. Roldugin, D.S. Ivanov, V.I. Penkov, Choosing control parameters for three axis magnetic stabilization in orbital frame // **Acta Astronautica**, 2015, V. 116, pp. 74-77.
14. M.Yu. Ovchinnikov, D.S. Roldugin, V.I. Penkov, Three-axis active magnetic attitude control asymptotical study // **Acta Astronautica**, 2015, V. 110, pp. 279-286.
15. D.S. Ivanov, N.A. Ivlev, S.O. Karpenko, M.Yu. Ovchinnikov, D.S. Roldugin, S.S. Tkachev, The results of flight tests of an attitude control system for the Chibis-M microsatellite // **Cosmic Research**, 2014, V. 52, N 3, pp. 205-215.
16. M.Yu. Ovchinnikov, D.S. Roldugin, S.S. Tkachev, S.O. Karpenko, New one-axis one-sensor magnetic attitude control theoretical and in-flight performance // **Acta Astronautica**, 2014, V. 105, N 1, pp. 12-16.
17. D. Roldugin, P. Testani, Spin-stabilized satellite magnetic attitude control scheme without initial detumbling // **Acta Astronautica**, 2014, V. 94, p. 446-454).
18. M.Ovchinnikov, D. Ivanov, N. Ivlev, S. Karpenko, D. Roldugin, S. Tkachev, Development, integrated investigation, laboratory and in-flight testing of Chibis-M microsatellite ADCS // **Acta Astronautica**, 2014, V. 93, p. 23-33.
19. S.O. Karpenko, M.Yu. Ovchinnikov, D.S. Roldugin, S.S. Tkachev, One-axis attitude of arbitrary satellite using magnetorquers only // **Cosmic Research**, 2013, V. 51, № 6, p. 478-484.
20. M.Yu. Ovchinnikov, D.S. Roldugin, V.I. Penkov, Asymptotic study of a complete magnetic attitude control cycle providing a single-axis orientation // **Acta Astronautica**, 2012, V. 77, pp. 48-60.
21. M. Yu. Ovchinnikov, V. I. Pen'kov, D. S. Roldugin, S O. Karpenko, Investigation of the effectiveness of an algorithm of active magnetic damping // **Cosmic Research**, 2012, V. 50, N. 2, pp. 170-176.
22. D.S. Ivanov, S.O. Karpenko, M. Yu. Ovchinnikov, D.S. Roldugin, S.S. Tkachev, Testing of attitude control algorithms for microsatellite "Chibis-M" at laboratory facility // **Journal of Computer and Systems Sciences International**, 2012, V. 51, N. 1, pp. 106-125.

23. M. Yu. Ovchinnikov, V. I. Penkov, D. S. Roldugin, Study of a Bunch of Three Algorithms for Magnetic Control of Attitude and Spin Rate of a Spin-Stabilized Satellite // **Cosmic Research**, 2012, V. 50, N. 4, pp. 304–312.
24. D. Roldugin, P. Testani, Active magnetic attitude control system for sun-pointing of a spin-stabilized satellite without initial detumbling // **Advances in the Astronautical Sciences**, 2012, V. 145, pp. 669-688.
25. A.A. Baranov, D.S. Roldugin, Six-Impulse Maneuvers for Rendezvous of Spacecraft in Near-Circular Noncoplanar Orbits // **Cosmic Research**, 2012, V. 50, N. 6, pp. 441–449.