

Borovkova Ekaterina Igorevna



Associate Professor, Ph. D. of Sciences in the field of Physics and Mathematics)

University positions (Saratov State University):

- Associate Professor, 2020-now
- Assistant Professor, 2012-2020
- Engineer, 2010-2012

Scientific positions:

- Researcher, Saratov State Medical University, 2020-now

Scientific interests:

- Data analysis
- Live systems

Interests: sport

Teaching disciplines:

- Data processing and Analysis
- Principles of building and protecting information systems

Grants and research projects:

Head of Grants of the President of the Russian Federation, RFBR, CRDF etc.
Researcher and executive officer of Megagrants, RSF, FTP, RFBR, etc.

Main scientific publications:

h-index: 5 (Scopus), 11 (RISC)

About 100 scientific publications, including: manuals, software registration certificates etc.

Main scientific papers:

1. Ponomarenko V.I., Karavaev A.S., Borovkova E.I., Hramkov A.N., Kiselev A.R., Prokhorov M.D., Penzel T. Decrease of coherence between the respiration and parasympathetic control of the heart rate with aging // CHAOS. 2021. V. 31. P. 073105
2. Karavaev A.S., Borovik A.S., Borovkova E.I., Orlova E.A., Simonyan M.A., Ponomarenko V.I., Skazkina V.V., Gridnev V.I., Bezruchko B.P., Prokhorov M.D., Kiselev A.R. Low-frequency component of photoplethysmogram reflects the autonomic control of blood pressure // Biophysical Journal. 2021. V. 120. P. 2657–2664.
3. Ekaterina I. Borovkova, Alexey N. Hramkov, Anatoly S. Karavaev, Mikhail D. Prokhorov, Yurii M. Ishbulatov, Thomas Penzel IEEE Senior member Directional Couplings Between Brain Structures and Autonomic Control Loops of Blood Circulation in Awake State and Different Stages of Sleep // Manuscript International Conference of the IEEE Engineering in Medicine & Biology Society. 2021.
4. Kiselev A.R., Borovkova E.I., Shvartz V.A., Skazkina V.V., Karavaev A.S., Prokhorov M.D., Ispiryan A.Y., Mironov S.A., Bockeria O.L. Low-frequency variability in photoplethysmographic waveform and heart rate during on-pump cardiac surgery with or without cardioplegia // Scientific Reports. 2020. V. 10. P. 2118.
5. Karavaev A.S., Kiselev A.R., Runnova A.E., Zhuravlev M.O., Borovkova E.I., Prokhorov M.D., Ponomarenko V.I., Pchelintseva S.V., Efremova T.Yu., Koronovskii A.A., Hramov A.E. Synchronization of infra-slow oscillations of brain potentials with respiration // Chaos. 2018. V. 28. P. 081102.
6. Kiselev A.R., Mironov S.A., Karavaev A.S., Kulminskiy D.D., Skazkina V.V., Borovkova E.I., Shvartz V.A., Ponomarenko V.I., Prokhorov M.D. A comprehensive assessment of cardiovascular autonomic control using photoplethysmograms recorded from earlobe and fingers // Physiological Measurement. 2016. V. 37. P. 580-595.
7. Karavaev A.S., Prokhorov M.D., Ponomarenko V.I., Kiselev A.R., Gridnev V.I., Ruban E.I. and Bezruchko B.P. Synchronization of low-frequency oscillations in the human cardiovascular system // Chaos. 2009. V. 19. P. 033112.
8. Karavaev A.S., Borovkova E.I., Bezruchko B.P., Kiselev A.R., Gridnev V.I., Posnenkova O.M., Shvartz V.A., Prokhorov M.D., Ponomarenko V.I. Phase and frequency locking of 0.1-hz oscillations in heart rate and baroreflex control of blood pressure by breathing of linearly varying frequency as determined in healthy subjects // Human Physiology. 2013.V. 39. № 4. P. 416-425.
9. Kiselev A.R., Karavaev A.S., Gridnev V.I., Prokhorov M.D., Ponomarenko V.I., Borovkova E.I., Shvartz V.A., Ishbulatov Yu.M., Posnenkova O.M., Bezruchko B.P. Method of estimation of synchronization strength between low-frequency oscillations in heart rate variability and photoplethysmographic

waveform variability // Russian Open Medical Journal. 2016. V. 5. № 1. P. 0101.

10. Prokhorov M.D., Kulminskiy D.D., Karavaev A.S., Ponomarenko V.I., Bezruchko B.P., Borovkova E.I., Kiselev A.R. Mobile device for monitoring of cardiovascular system state based on assessment of synchronization of its low-frequency rhythms // Open Hypertension Journal. 2018. V. 10. № 1. P. 46-51.