

Stanislav Borysov

List of Publications

Peer-reviewed journal articles

1. *Online Search Tool for Graphical Patterns in Electronic Band Structures*
S.S. Borysov, B. Olsthoorn, M.B. Gedik, R.M. Geilhufe, A.V. Balatsky
Nature npj Computational Materials 4, 46 (2018)
<https://doi.org/10.1038/s41524-018-0104-9>
2. *Towards novel organic High-Tc superconductors: Data mining using density of states similarity search*
R.M. Geilhufe, **S.S. Borysov**, D. Kalpakchi, A.V. Balatsky
Physical Review Materials 2, 024802 (2018)
<https://doi.org/10.1103/PhysRevMaterials.2.024802>
3. *Data mining for three-dimensional organic Dirac materials: Focus on space group 19*
R.M. Geilhufe, **S.S. Borysov**, A. Bouhon, A.V. Balatsky
Nature Scientific Reports 7, 7298 (2017)
<https://doi.org/10.1038/s41598-017-07374-7>
4. *Organic Materials Database: an open-access online database for data mining*
S.S. Borysov, R.M. Geilhufe, A.V. Balatsky
PLoS ONE 12(2), e0171501 (2017)
<https://doi.org/10.1371/journal.pone.0171501>
5. *Three-dimensional organic Dirac-line materials due to nonsymmorphic symmetry: A data mining approach*
R.M. Geilhufe, A. Bouhon, **S.S. Borysov**, A.V. Balatsky
Physical Review B 95, 041103(R) (2017)
<https://doi.org/10.1103/PhysRevB.95.041103>
6. *A Bayesian additive model for understanding public transport usage in special events*
F. Rodrigues, **S.S. Borysov**, B. Ribeiro, F.C. Pereira
IEEE Transactions on Pattern Analysis and Machine Intelligence 39(11), 2113-2126 (2017)
<https://doi.org/10.1109/TPAMI.2016.2635136>
7. *U.S. stock market interaction network as learned by the Boltzmann machine*
S.S. Borysov, Y. Roudi, A.V. Balatsky
European Physical Journal B 88, 321 (2015)
<https://doi.org/10.1140/epjb/e2015-60282-3>
8. *Resource demand growth and sustainability due to increased world consumption*
A.V. Balatsky, G.I. Balatsky, **S.S. Borysov**
Sustainability 7(3), 3430-3440 (2015)
<https://doi.org/10.3390/su7033430>
9. *Determining surface properties with bimodal and multimodal AFM*
D. Forchheimer, **S.S. Borysov**, D.B. Haviland
Nanotechnology 25, 485708 (2014)
<https://doi.org/10.1088/0957-4484/25/48/485708>

10. *Dynamic calibration of higher eigenmode parameters of a cantilever in atomic force microscopy using tip-surface interactions*
S.S. Borysov, D. Forchheimer, D.B. Haviland
Beilstein Journal of Nanotechnology 5, 1899-1904 (2014)
<https://doi.org/10.3762/bjnano.5.200>
11. *Cross-correlation asymmetries and causal relationships between stock and market risk*
S.S. Borysov, A.V. Balatsky
PLoS ONE 9(8), e105874 (2014)
<https://doi.org/10.1371/journal.pone.0105874>
12. *Reconstruction of tip-surface interactions with multimodal intermodulation atomic force microscopy*
S.S. Borysov, D. Platz, A.S. de Wijn, D. Forchheimer, E.A. Tolén, A.V. Balatsky, D.B. Haviland
Physical Review B 88, 115405 (2013)
<https://doi.org/10.1103/PhysRevB.88.115405>
13. *Creation probabilities of hierarchical trees*
A.I. Olemskoi, **S.S. Borysov**, I.A. Shuda
Journal of Physical Studies 15, No. 2 (2011)
<http://physics.lnu.edu.ua/jps/2011/2/abs/a2001-16.html>
14. *Suppression of oscillations by Lévy noise*
A.I. Olemskoi, **S.S. Borysov**, I.A. Shuda
Ukrainian Journal of Physics 56, No. 3, 287-295 (2011)
<http://archive.ujp.bitp.kiev.ua/files/journals/56/3/560312p.pdf>
15. *Analytical and numerical studies of creation probabilities of hierarchical trees*
A.I. Olemskoi, **S.S. Borysov**, I.A. Shuda
Condensed Matter Physics 14, No. 1, 14001-1 (2011)
<https://doi.org/10.5488/CMP.14.14001>
16. *Statistical field theories deformed within different calculi*
A.I. Olemskoi, **S.S. Borysov**, I.A. Shuda
European Physical Journal B 77, 219-231 (2010)
<https://doi.org/10.1140/epjb/e2010-00257-4>
17. *Noise-induced oscillations in non-equilibrium steady state systems*
I.A. Shuda, **S.S. Borysov**, A.I. Olemskoi
Physica Scripta 79, 065001 (2009)
<https://doi.org/10.1088/0031-8949/79/06/065001>
18. *Deformed sum of geometric progression [in Russian]*
A.I. Olemskoi, **S.S. Borysov**, I.A. Shuda
Visnyk of SSU: Physics-Mathematics-Mechanics 2, 8289 (2008)
<http://essuir.sumdu.edu.ua/handle/123456789/1790>
19. *Conditions for self-organized modulation*
O.I. Olemskoi, I.O. Shuda, **S.S. Borisov**
Ukrainian Journal of Physics 53, No. 11, 11201128 (2008)
<http://archive.ujp.bitp.kiev.ua/files/journals/53/11/5311113p.pdf>

Peer-reviewed conference contributions

1. *Band gap prediction for large organic crystal structures with machine learning*
B. Olsthoorn, R.M. Geilhufe, **S.S. Borysov**, A.V. Balatsky
Advances in Neural Information Processing Systems (NeurIPS), Spotlight Talk at the Workshop on Machine Learning for Molecules and Materials, Montréal, Canada (2018)
<https://arxiv.org/abs/1810.12814>
2. *Traffic-flow & Air Quality Experiment*
C.G. Nielsen, **S.S. Borysov**, M. Gaml, T. Hjøllund, V. Krishnamoorthy
25th ITS World Congress, Copenhagen, Denmark (2018)
<https://findit.dtu.dk/en/catalog/2441249783>
3. *Using Internet search queries to predict human mobility in social events*
S.S. Borysov, M. Lourenco, F. Rodrigues, A.V. Balatsky, F.C. Pereira
2016 IEEE 19th International Conference on Intelligent Transportation Systems (ITSC), Rio de Janeiro, Brazil, 1342-1347 (2016)
<https://doi.org/10.1109/ITSC.2016.7795731>

Book chapters

1. *Machine Learning Fundamentals*
F.C. Pereira, **S.S. Borysov**
In "Mobility Patterns, Big Data and Transport Analytics", edited by C. Antoniou, L. Dimitriou, F.C. Pereira, Elsevier, pp. 9-29 (2019)
<https://doi.org/10.1016/B978-0-12-812970-8.00002-6>

Preprints

1. *Band gap prediction for large organic crystal structures with machine learning*
B. Olsthoorn, R.M. Geilhufe, **S.S. Borysov**, A.V. Balatsky
arXiv preprint 1810.12814 (2018)
<https://arxiv.org/abs/1810.12814>
2. *Scalable Population Synthesis with Deep Generative Modeling*
S.S. Borysov, J. Rich, F.C. Pereira
arXiv preprint 1808.06910 (2018)
<https://arxiv.org/abs/1808.06910>
3. *Symmetry-Based Search for Filling-Enforced Organic Semimetals: Rampant Magnetic Instabilities*
B.J. Wieder, R.M. Geilhufe, **S.S. Borysov**, A.V. Balatsky
In preparation (2018)
4. *Introducing Super Pseudo-Panels: Application to Transport Preference Dynamics*
S.S. Borysov, J. Rich
In preparation (2018)

Conference proceedings and invited talks

1. *Population Synthesis Meets Deep Generative Modelling*
S.S. Borysov, J. Rich, F.C. Pereira
7th Symposium of the European Association for Research in Transportation (hEART), Athens, Greece (2018)
2. *Online Pattern Search Tools for Organic Materials Database*
S.S. Borysov, R.M. Geilhufe, B. Olsthoorn, A.V. Balatsky
APS Bulletin of the American Physical Society Volume 62, APS March Meeting 2018, Los Angeles, CA, USA (2018)
3. *Electronic Band Structure Prediction with Machine Learning*
B. Olsthoorn, **S.S. Borysov**, R.M. Geilhufe, A.V. Balatsky
APS Bulletin of the American Physical Society Volume 62, APS March Meeting 2018, Los Angeles, CA, USA (2018)
4. *Interaction Instabilities in Organic Filling-Enforced Semimetals*
B. Wieder, R.M. Geilhufe, **S.S. Borysov**, A.V. Balatsky
APS Bulletin of the American Physical Society Volume 62, APS March Meeting 2018, Los Angeles, CA, USA (2018)
5. *Dirac Materials and Organic Materials Database*
A.V. Balatsky, **S.S. Borysov**
APS Editorial office seminar, Ridge, NY, USA (2017)
6. *Organic Materials Database: Electronic structure database with focus on data mining*
S.S. Borysov, R.M. Geilhufe, A.V. Balatsky
APS Bulletin of the American Physical Society Volume 61, APS March Meeting 2017, New Orleans, LA, USA (2017)
7. *Data mining for 3D organic Dirac materials*
R.M. Geilhufe, **S.S. Borysov**, A. Bouhon, A. Balatsky
APS Bulletin of the American Physical Society Volume 61, APS March Meeting 2017, New Orleans, LA, USA (2017)
8. *Organic Materials Database: Online database with focus on data mining*
S.S. Borysov, R.M. Geilhufe, A.V. Balatsky
Materials Science / Data Technology Nexus: IMS mini-symposium, Santa Fe, NM, USA (2016)
9. *A generative pairwise interaction model for the U.S. stock market*
S.S. Borysov, Y. Roudi, A.V. Balatsky
Asia-Pacific Econophysics Conference 2015, Singapore (2015)
10. *A supervised topic model for overcrowding prediction*
S.S. Borysov
Future Urban Mobility Symposium 2015, Singapore (2015)
11. *Lead-lag relationships between stock and market risk within linear response theory*
S.S. Borysov, A.V. Balatsky
APS Bulletin of the American Physical Society Volume 60, APS March Meeting 2015, San Antonio, TX, USA (2015)

12. *Internal and external influence in the US stock market*
S.S. Borysov, Y. Roudi, A.V. Balatsky
APS Bulletin of the American Physical Society Volume 59, APS March Meeting 2014,
Denver, CO, USA (2014)
13. *Reconstruction of tip-surface interactions with multimodal intermodulation atomic force microscopy*
S.S. Borysov, D. Platz, A.S. de Wijn, D. Forchheimer, E.A. Tolén, A.V. Balatsky, D.B. Haviland
APS Bulletin of the American Physical Society Volume 59, APS March Meeting 2014,
Denver, CO, USA (2014)
14. *Investigation of creation probability of hierarchical structures* [in Russian]
A.I. Olemskoi, **S.S. Borysov**
Nanostructure materials 2010, Kiev, Ukraine (2010)
15. *Generalization of statistical field theories within deformed calculi*
A.I. Olemskoi, **S.S. Borysov**, I.A. Shuda
Modern Problems in Condensed Matter Physics, Kiev, Ukraine (2010)
16. *Creation probabilities of hierarchical trees within deformed algebra*
A.I. Olemskoi, **S.S. Borysov**, I.A. Shuda
Ukrainian-German symposium on physics and chemistry of nanostructures and on
nanobiotechnology, Beregove, AR Crimea, Ukraine (2010)
17. *Creation probability of hierarchical structure* [in Russian]
S.S. Borysov, O.I. Olemskoi
SSU Sci. Conf. 2009, Sumy, Ukraine (2009)
18. *Conditions for self-organized modulation* [in Ukrainian]
S.S. Borysov, I.A. Shuda, O.I. Olemskoi
SSU Sci. Conf. 2008, Sumy, Ukraine (2008)
19. *Noise induced Hopf bifurcation*
I.A. Shuda, **S.S. Borisov**, A.I. Olemskoi
Int. conf. in Statistical Physics 2008, Kolymbari, Chania, Greece (2008)
20. *Conditions for Hopf bifurcation in Lorenz system* [in Ukrainian]
A.I. Olemskoi, I.A. Shuda, **S.S. Borysov**
SSCAPI-2008, Lviv, Ukraine (2008)