

# Symmetries and correspondences

## Papers, proceedings, chapters and other texts

### 2015

F. Bogomolov (with V. Kulikov), The ambiguity index of an equipped finite group. *Eur. J. Math.*, 1 no. 2(2015), 260–278

F. Bogomolov (with A. M. Silberstein), The disjoint divisors theorem for complete varieties [pdf](#)

I. Fesenko, Geometric adeles and the Riemann–Roch theorem for 1-cycles on surfaces, *Moscow Math. J.* 15(2015), 435–453

I. Fesenko, Arithmetic deformation theory via arithmetic fundamental groups and nonarchimedean theta functions, notes on the work of Shinichi Mochizuki, *Europ. J. Math.* (2015) 1:405–440

N. Hitchin, Higgs bundles and diffeomorphism groups [pdf](#)

M. Kapranov, Membranes and higher groupoids [pdf](#)

M. Kim, Arithmetic Chern-Simons theory I [pdf](#)

S. Pimenov, Shifted Poisson and Batalin-Vilkovisky structures on the derived variety of complexes [pdf](#)

B. Zilber (with K. Tent), A non-desarguesian projective plane [pdf](#)

B. Zilber (with M. Itai), Notes on a model theory of quantum 2-torus for generic  $q$  [pdf](#)

B. Zilber, Model theory of special subvarieties and Schanuel-type conjectures [pdf](#)

### 2016

F. Bogomolov (with H. Fu), Division polynomials and intersection of projective torsion points, *Eur. J. Math.* 2 (2016), no. 3, 644–660

F. Bogomolov (with A. Pirutka, A.M. Silberstein), Families of disjoint divisors on varieties, *Eur. J. Math.* 2 (2016), no. 4, 917–928

F. Bogomolov (with C. Böhning, H.-C. Graf von Bothmer), Birationally isotrivial fiber spaces, *Eur. J. Math.* 2 (2016), no. 1, 45–54

F. Bogomolov (with J. Qian), On contraction of algebraic points [pdf](#)

- F. Bogomolov (with L. Kamenova, S. Lu, M. Verbitsky), On the Kobayashi pseudometric, complex automorphisms and hyperkaehler manifolds, to appear in Simons Proceedings vol.
- F. Bogomolov (with L. H. Halle, F. Pazuki, S. Tanimoto), Abelian Calabi-Yau threefolds: Néron models and rational points [pdf](#)
- F. Bogomolov (with B. De Oliveira), Local structure of closed symmetric 2-differentials, Foliation theory in algebraic geometry, 53–71, Simons Symp., Springer, Cham, 2016.
- F. Bogomolov (with M. McQuillan), Rational curves on foliated varieties, Foliation theory in algebraic geometry, 21–51, Simons Symp., Springer, Cham, 2016.
- I. Fesenko (ed.), Proceedings of the CMI/Symmetries and Correspondences workshop on IUT theory of Shinichi Mochizuki [page](#)
- I. Fesenko, Fukugen, Inference: International Review of Science [pdf](#)
- M. Kapranov (with M. Kontsevich, Y. Soibelman), Algebra of the infrared and secondary polytopes, Adv. in Math.300 (2016) 616-761
- M. Kapranov (with V. Schechtman), Perverse sheaves on real hyperplane arrangements, Annals of Math. 183(2016) 619-769
- M. Kapranov (with R. Bezrukavnikov), Microlocal sheaves and quiver varieties, Ann. Sci. Univ. Toulouse 25(2016), 473-516
- M. Kapranov (with V. Schechtman), Perverse sheaves and graphs on surfaces [pdf](#)
- J. Kelly, Homotopy in exact categories [pdf](#)
- M. Kim (with H.-J. Chung, D. Kim, J. Park, H. Yoo), Arithmetic Chern-Simons Theory II, arXiv:1609.03012
- K. Kremnizer (with O. Ben-Bassat), Non-Archimedean analytic geometry as relative algebraic geometry, Ann. Fac. Sci. Toulouse Math. (6) 26 (2017) 49–126
- T. Oliver, Zeta integrals on arithmetic surfaces, St. Petersburg Math. J. 27 (2016) 1003-1028
- B. Pym, Elliptic singularities on log symplectic manifolds and Feigin–Odesskii Poisson brackets [pdf](#)
- B. Pym (with P. Safronov), Shifted symplectic Lie algebroids [pdf](#)
- B. Zilber, The semantics of the canonical commutation relation [pdf](#)
- B. Zilber, Model theory of special subvarieties and Schanuel-type conjectures, Annals of Pure and Applied Logic 167 1000-1028 (2016)
- B. Zilber (with L. Shaheen), Model theory and geometry of representations of rings of integers [pdf](#)

**2017**

D. Beraldo, Loop groups actions on categories and Whittaker invariants, *Adv. Math.* 322 (2017) 565-636

D. Beraldo, The centre of  $H(Y)$ , arXiv:1709.07867 [pdf](#)

F. Bogomolov (with Yu. Tschinkel), Universal spaces for unramified Galois cohomology, Brauer groups and obstruction problems, 57–86, *Progr. Math.*, 320, Birkhäuser/Springer, Cham, 2017

F. Bogomolov (with F. Buonerba), Dominant classes of projective varieties [pdf](#)

F. Bogomolov (with H. Fu, Yu. Tschinkel), Torsion of elliptic curves and unlikely intersections [pdf](#)

F. Bogomolov (with L. Kamenova, M. Verbitsky), Algebraically hyperbolic manifolds have finite automorphism groups, *Geometry over nonclosed fields*, 1–17, *Simons Symp.*, Springer, Cham, 2017

F. Bogomolov (with M. Rovinsky, Yu. Tschinkel), Homomorphisms of multiplicative groups of fields preserving algebraic dependence [pdf](#)

F. Bogomolov (with F. Buonerba, N. Kurnosov), Classifying VII<sub>0</sub> surfaces with  $b_2 = 0$  via group theory [pdf](#)

F. Bogomolov (with J. Qian), On contraction of algebraic points, *Bull. Korean Math. Soc.* 54 (2017), 1577-1596

F. Bogomolov (with L. Kamenova, S. Lu, M. Verbitsky), On the Kobayashi pseudometric, complex automorphisms and hyperkähler manifolds. In *Geometry over nonclosed fields*, 1–17, *Simons Symp.*, 2017.

N. Hitchin, Spinors, Lagrangians and rank 2 Higgs bundles, *Proceed. LMS* (115) (2017) 33-54.

M. Kapranov (with O. Schiffmann and E. Vasserot), The Hall algebra of a curve, *Selecta Math.* 23 (2017) 117-177

M. Kapranov (with G. Faonte, B. Hennion), Higher Kac-Moody algebras and moduli spaces of G-bundles [pdf](#)

M. Kapranov, S. Pimenov, Derived varieties of complexes and Kostant's theorem for  $\mathfrak{gl}(m|n)$ , In *Algebra, geometry, and physics in the 21st century*, 131-176, *Progr. Math.*, 324, 2017

M. Kapranov (with E. Routis), Complete complexes and spectral sequences, *Pure Appl. Math. Q.* 13 (2017) 215–246

M. Kapranov (with M. Finkelberg, V. Schechtman), Fourier transform on hyperplane arrangements [pdf](#)

M. Kim, Diophantine geometry and non-abelian reciprocity laws I, In *Elliptic curves, modular forms and Iwasawa theory*, Springer 2017, 311-334

M. Kim (with H.-J. Chung, D. Kim, G. Pappas, J. Park, H. Yoo), Abelian arithmetic Chern-Simons theory and arithmetic linking numbers, *IMRN*, rnx271, <https://doi.org/10.1093/imrn/rnx271>

M. Kim (with W. Yang), Mirror symmetry, mixed motives and  $\zeta(3)$ , arXiv:1710.02344

K. Kremnizer (with C. Smith), A Tannakian reconstruction theorem for IndBanach spaces [pdf](#)

K. Kremnizer (with D. Borisov), Quasi-coherent sheaves in differential geometry [pdf](#)

K. Kremnizer (with F. Bambozzi, O. Ben-Bassat), Analytic geometry over  $F_1$  and the Fargues-Fontaine curve [pdf](#)

T. Oliver, Mean-periodicity and automorphicity, *J. Math. Soc. Japan* 69 (2017) 25-51

A. Topaz, A Torelli theorem for higher-dimensional function fields [pdf](#)

B. Zilber, Analytic Zariski structures and non-elementary categoricity, In *Beyond first order model theories*, CRC Press 2017

## 2018

D. Beraldo, Sheaves of categories with local action of Hochschild cochains [pdf](#)

D. Beraldo, The spectral gluing theorem revisited [pdf](#)

Th. Bitoun, Length of local cohomology in positive characteristic and ordinarity, to appear in *IMRN* 2018 [pdf](#)

T. Bitoun (with C. Bogner, R. Klausen and E. Panzer), Feynman integral relations from parametric annihilators, *Lett. Math. Physics* (2018)

Th. Bitoun (with A. Bode), Extending meromorphic connections to coadmissible D-cap-modules, arXiv:1812.05000

Th. Bitoun (with C. Bogner, R. Clausen, E. Panzer), The number of master integrals as Euler characteristic, arXiv:1809.03399

Th. Bitoun (with T. Schedler), On D-modules related to the b-function and Hamiltonian flow, to appear in *Comp. Math.* 2018.

Th. Bitoun, On the p-supports of a holonomic D-module, *Invent. Math.* (2018)

Th. Bitoun, On a theory of the b-function in positive characteristic, to appear in *Selecta Math.*

F. Bogomolov (with H. Fu), Elliptic curves with large intersection of projective torsion points, *Eur. J. Math.* 4 (2018) 555–560

F. Bogomolov (with F. Buonerba), Dominant classes of projective varieties, *Eur. J. Math.* 4 (2018)

F. Bogomolov (with L.H. Halle, F. Pazuki, S. Tanimoto), Abelian Calabi-Yau threefolds: Neron models and rational points, *Math. Res. Lett.* 25 (2018) 367–392

F. Bogomolov (with H. Fu, Yu. Tschinkel), Torsion of elliptic curves and unlikely intersections, *Geometry and Physics: A Festschrift in honour of Nigel Hitchin*, OUP 2018

- F. Bogomolov (with N. Kurnosov), Lagrangian fibrations for IHS fourfolds, arXiv:1810.11011
- F. Bogomolov and Yu. Tschinkel, Noether's problem and descent, ICCM Not. 6 (2018), no. 2, 25–31
- F. Bogomolov (with C. Bohning, A. Pirutka), On stable cohomology of central extensions of elementary abelian groups, arXiv:1809.11023
- W. Czerniawska, Higher adelic programme, adelic Riemann-Roch theorems and the BSD conjecture, PhD thesis, Nottingham 2018
- P. Dolce, Adelic geometry on arithmetic surfaces I: idelic and adelic interpretation of Deligne pairing pdf
- I. Fesenko, 2d zeta integral, geometry of 2d adeles and the BSD conjecture for elliptic curves over global fields (Analysis on arithmetic schemes. III) pdf
- I. Fesenko (with S.V. Vostokov, S.H. Yoon), Generalised Kawada-Satake method for Mackey functors in class field theory, Europ. J. Math. 4(2018) 953-987
- N. Hitchin,  $SL(2)$  over the octonions, Math. Proceed. Royal Irish Acad. 118A (2018) 21-38
- N. Hitchin, Remarks on Nahm's equations, in Modern Geometry: A celebration of the work of Simon Donaldson, V. Munoz et al. (eds.), Proc. Symp. Pure Math. 99(2018) 83-96,
- M. Kapranov (with A. Bondal and V. Schechtman), Perverse sheaves and birational geometry, Selecta Math. 24 (2018) 85–143
- M. Kapranov (with T. Dyckerhoff), Triangulated surfaces in triangulated categories, J. Eur. Math. Soc. (JEMS) 20 (2018) 1473–1524
- M. Kapranov (with B. Hennion), Gelfand-Fuchs cohomology in algebraic geometry and factorization algebras, arXiv:1811.05032
- J. Kelly, Exact categories, Koszul duality, and derived analytic algebra, PhD thesis, Oxford 2018
- M. Kim, Principal bundles and reciprocity laws in number theory, In Algebraic geometry: Salt Lake City 2015, 305–318, Proc. Sympos. Pure Math., 97.2, Amer. Math. Soc., Providence, RI, 2018
- M. Kim (with J. Balakrishnan, I. Dan-Cohen, S. Wewers), A non-abelian conjecture of Tate-Shafarevich type for hyperbolic curves, Math. Ann. 372(2018) 369-428
- M. Kim, Arithmetic gauge theory: a brief introduction, Modern Phys. Lett. A 33 (2018)
- K. Kremnizer (with F. Bambozzi, O. Ben-Bassat), Stein domains in Banach algebraic geometry, J. Funct. Anal. 274 (2018) 1865–1927 pdf
- K. Kremnizer (with D. Borisov), Beyond perturbation 1: de Rham spaces, J. Geometry and Physics 124(2018) 208-224 pdf
- K. Kremnizer (with D. Borisov), Beyond perturbation 2: asymptotics and Beilinson-Drinfeld Grassmannians in differential geometry pdf
- K. Kremnizer (with A. Gal, E. Gal), Hall categories and KLR categorification pdf

A. Topaz, The Galois action on geometric lattices and the mod- $l$  I/OM, *Invent. Math.* 213(2018) 371-459

A. Topaz (with P. Guillot, J. Minac), Four-fold Massey products in Galois cohomology (with an appendix by O. Wittenberg), *Comp. Math.* 154(2018) 1921-1959

A. Topaz (with J. Bell, R. Moosa), Invariant hypersurfaces, arXiv:1812.08346

B. Zilber, Structural approximation and quadratic quantum mechanics [pdf](#)

## 2019

D. Beraldo, The topological chiral homology of the spherical category [pdf](#), *J. Topology* (2019)

F. A. Bogomolov (with M. Rovinsky and Yu. Tschinkel), Homomorphisms of multiplicative groups of fields preserving algebraic dependence, *Eur. J. Math.* 5 (2019), no. 3, 656–685

F. Bogomolov (with B. Blum-Smith), Purely noncommuting groups, *Eur. J. Math.* 5 (2019), no. 4, 1173–1191

P. Dolce, Low dimensional adelic geometry, [PhD thesis](#), Nottingham 2019

P. Dolce, Explicit Deligne pairing [pdf](#)

I. Fesenko, Class field theory, its three main generalisations, and applications [pdf](#)

N. Hitchin, Critical loci for Higgs bundles, *Comm. Math. Phys.* 366 (2019), no. 2, 841–864

N. Hitchin, Integrable systems and special Kaehler metrics, preprint 2019

E. Hrushovski, Ax's theorem with an additive character, arXiv:1911.01096

M. Kapranov (with G. Faonte, B. Hennion) Higher Kac–Moody algebras and moduli spaces of G-bundles, *Adv. Math.* 346 (2019), 389–466

M. Kapranov (with E. Vasserot), The cohomological Hall algebra of a surface and factorization cohomology [pdf](#)

M. Kapranov (with T. Dyckerhoff), Topological 1-Segal and 2-Segal spaces, in *Higher Segal Spaces* (2019) 9-30

M. Kapranov (with T. Dyckerhoff), Discrete 2-Segal spaces, in *Higher Segal Spaces* (2019) 31-70

A. Minamide (with H. Nakamura), The automorphism groups of the profinite braid groups [pdf](#)

R. Waller, Measure and integration on  $GL_2$  over a two-dimensional local field, *New J. Math* (2019) 396-422

R. Waller, An approach to harmonic analysis on non-locally compact groups I: level structures over locally compact groups [pdf](#)

R. Waller, An approach to harmonic analysis on non-locally compact groups II: an invariant measure on groups of ordered type [pdf](#)

## 2020

F. A. Bogomolov (with L. Kamenova, M. Verbitsky), Algebraically hyperbolic manifolds have finite automorphism groups, *Commun. Contemp. Math.* 22 (2020), no. 2, 10 pp.

W. Czerniawska, P. Dolce, Adelic geometry on arithmetic surfaces II: completed adèles and idelic Arakelov intersection theory, *J. Number Theory* 211 (2020) 235–296

P. Dolce (with R. Gualdi) Numerical equivalence of  $R$ -divisors and Shioda-Tate formula for arithmetic varieties [pdf](#)

I. Fesenko, W. Porowski (with S. Mochizuki, Yu. Hoshi, A. Minamide), Explicit estimates in inter-universal Teichmüller theory [pdf](#)

I. Fesenko, K. Kremnitzer (with A. Zhigljavsky, J. Noonan et al), Generic probabilistic modelling and non-homogeneity issues for the UK epidemic of COVID-19 [pdf](#)

I. Fesenko, K. Kremnitzer (with A. Zhigljavsky, J. Noonan et al), Comparison of different exit scenarios from the lock-down for COVID-19 epidemic in the UK and assessing uncertainty of the predictions [pdf](#)

I. Fesenko, K. Kremnitzer (with A. Zhigljavsky, J. Noonan et al), A prototype decision support tool for handling the COVID-19 UK epidemic [pdf](#)

N. Hitchin, A Teichmüller space for negatively curved surfaces [pdf](#)

M. Kapranov (with R. Penner), *Topology and K-Theory: Lectures by Daniel Quillen*, Springer 2020

M. Kapranov (with V. Schechtman) Parabolic induction and perverse sheaves on  $h/W$  [pdf](#)

K. Kremnitzer (with F. Bambozzi) On the Sheafyness Property of Spectra of Banach Rings [pdf](#)

K. Kremnitzer (with O. Ben-Basset) Fréchet modules and descent [pdf](#)

A. Minamide, Sh. Tsujimura, Internal indecomposability of various profinite groups in anabelian geometry [pdf](#)

W. Porowski, Anabelian reconstruction of the Neron-Tate local height function, preprint 2020

W. Porowski, Anabelian geometry of punctured elliptic curves, [PhD thesis](#), Nottingham 2020

## 2021

I. Fesenko, On asymptotic equivalence of classes of elliptic curves over  $\mathbb{Q}$  [pdf](#)

N. Hitchin, The central sphere of an ALE space, Quart. J. Mathematics 2021 [pdf](#)

N. Hitchin (with T. Hausel) Very stable Higgs bundles, equivariant multiplicity and mirror symmetry [pdf](#)

E. Hrushovski (with M. Hils, P. Simon) Definable equivariant retractions in non-archimedean geometry [arXiv:2101.02619](#)

W. Porowski, Pro- $p$  criterion of good reduction of punctured elliptic curves, preprint 2021