

LIST OF SCIENTIFIC PUBLICATIONS

WOLFGANG BERTRAM

This is a complete list of my scientific publications. For comments and a more systematic description of my research domain, see [on my homepage](#).

Theses

- (1) Realisierung einer holomorphen diskreten Reihe auf dem einschaligen Hyperboloid, Diplomarbeit, Göttingen 1990.
- (2) Dualité des espaces riemanniens symétriques et analyse harmonique. Thèse de doctorat (phd), Université Pierre-et-Marie Curie (Paris-VI), Paris, 1994
- (3) The Geometry of Jordan and Lie Structures. Habilitation Thesis, Technische Universität Clausthal, 1998, available at <http://iecl.univ-lorraine.fr/~Wolfgang.Bertram/WBHabilitation.pdf>

Books

- (1) The Geometry of Jordan and Lie Structures. Springer Lecture Notes in Mathematics vol. 1754, Berlin 2000; this is a slightly extended version of my Habilitationsschrift.
- (2) Differential Geometry, Lie Groups and Symmetric Spaces over General Base Fields and Rings. Memoirs of the AMS 192, no.900 (see paper 19 below).
- (3) Calcul différentiel topologique élémentaire. Calvage et Mounet, Paris, 2011.

Research papers

- (1) Généralisation d'une Formule de Ramanujan dans le cadre de la dualité des espaces riemanniens symétriques. Comptes Rendus Ac. Sci. Paris 316 (1993), Série I, 1161-1166.
- (2) Les Formules de Mehler et de Heine généralisées pour les espaces riemanniens symétriques de rang un. Comptes Rend. Ac. Sci. Paris 318 (1994), 111-116.
- (3) Un théorème de Liouville pour les algèbres de Jordan. Bull. Soc. Math. Francaise 124 (1996), 299-327.
- (4) On some Causal and Conformal Groups. J. Lie Theory 6 (1996), 215-244.
- (5) Ramanujan's master theorem and duality of symmetric spaces. J. of Funct. An. 148 (1997), 117-151.
- (6) Algebraic Structures of Makarevič Spaces. I. Transformation Groups, Vol. 3, No.1, (1998), 3-32.
- (7) Conformal group and fundamental theorem for a class of symmetric spaces. Math. Z. 233 (2000), 39 -73.
- (8) Reproducing kernels on vector bundles. (With J. Hilgert.) P. 43-58 in: Lie Theory and Its Applications in Physics III. World Scientific, Singapore 1998.
- (9) Hardy Spaces and Analytic Continuation of Bergman Spaces. (With J. Hilgert.) Bull. Soc. Math. Francaise 126 (1998), 435-482.

- (10) Geometric Bergman and Hardy spaces. (With J. Hilgert.) Michigan Math. J. 47 (2000), 235 -263.
- (11) Complexifications of Symmetric Spaces and Jordan Theory. Transactions of the A.M.S. 353 (2001), 2531 - 2556
- (12) Characterization of the Kantor-Koecher-Tits algebra by a generalized Ahlfors operator. (With J. Hilgert.) J. of Lie Theory 11 (2001), 415-426.
- (13) Generalized projective geometries: From linear algebra via affine algebra to projective algebra. Linear Algebra and its Appl. 378 (2004), 109 - 134.
- (14) Generalized projective geometries: General theory and equivalence with Jordan structures. Advances in Geometry 3 (2002), 329-369.
- (15) The geometry of null systems, Jordan algebras and von Staudt's Theorem. Ann. Inst. Fourier 53 (2003) fasc. 1, 193-225.
- (16) Complex and quaternionic structures on symmetric spaces - correspondence with Freudenthal-Kantor triple systems. In : Theory of Lie Groups and Manifolds, Sophia Kokyuroku in Mathematics 45 (2002), 57-76.
- (17) Differential Calculus over general base fields and rings. (With H. Gloeckner and K.-H. Neeb), Expo. Math. 22 (2004), 213-282
<http://arxiv.org/abs/math/0303300>
- (18) Projective completions of Jordan pairs. Part I: The generalized projective geometry of a Lie algebra (With K.-H. Neeb), J. of Algebra 227 , 2 (2004), 474-519 <http://arxiv.org/abs/math/0306272>
- (19) Differential Geometry, Lie Groups and Symmetric Spaces over General Base Fields and Rings. Memoirs of the AMS 192, no.900 (2008) <http://arxiv.org/abs/math/0502168>. The text first appeared as a series of 5 preprints, Institut Elie Cartan Nancy 2003 - 2005:
 - (a) Part I: First and Second Order Geometry.
 - (b) Part II: Higher Order Geometry.
 - (c) Part III: Lie theory.
 - (d) Part IV: Geometric Multilinear Algebra.
 - (e) Part V: The exponential jet
- (20) Projective completions of Jordan pairs. Part II: Manifold structures and symmetric spaces (With K.-H. Neeb), Geometriae Dedicata 112 , 1, (2005), 73-113. <http://arxiv.org/abs/math/0401236>
- (21) Inner Ideals and Intrinsic Subspaces. (With H. Loewe.) Adv. in Geometry 8 (2008), 53-85. <http://arxiv.org/abs/math/0606448>
- (22) Homotopes and conformal deformations of symmetric spaces. J. of Lie Theory 18 (2008), no.2, 301-333. <http://arxiv.org/abs/math/0606449>
- (23) Is there a Jordan geometry underlying quantum physics? Int. J. of Theoretical Physics 47 (no. 2) (2008), 2754-2782.
<http://arxiv.org/abs/0801.3069>
- (24) Symmetric bundles and representations of Lie triple systems (With M. Didry), Journal of Generalized Lie Theory and Applications 3 (no.4) (2009), 261-284. <http://arxiv.org/abs/0710.1543>
- (25) Associative Geometries. I: Torsors, Linear Relations and Grassmannians (With M. Kinyon) Journal of Lie Theory 20 (2) (2010), 215-252.
<http://arxiv.org/abs/0903.5441>

- (26) Associative Geometries. II: Involutions, the Classical Torsors, and their Homotopes (With M. Kinyon) *Journal of Lie Theory* 20 (2) (2010), 253-282.
<http://arxiv.org/abs/0909.4438>
- (27) Simplicial differential calculus, divided differences, and construction of Weil functors. *Forum Mathematicum* 25 (1) (2013), 19-47.
<http://arxiv.org/abs/1009.2354>
- (28) Homotopes of symmetric spaces. I : Construction by algebras with two involutions. (With P. Bieliavsky). to appear (in the next century?).
<http://arxiv.org/abs/1011.2923>
- (29) Homotopes of symmetric spaces. II : Structure Variety and Classification (With P. Bieliavsky). to appear. <http://fr.arxiv.org/abs/1011.3161>
- (30) A general construction of Weil functors. (With A. Souvay) *Cahiers de topologie et géométrie différentielle catégoriques* LV (4) (2014), 267 – 313.
<http://arxiv.org/abs/1111.2463>
- (31) The projective geometry of a group. <http://arxiv.org/abs/1201.6201>
- (32) Torsors and ternary Moufang loops arising in projective geometry (With M. Kinyon). P. 343 – 360 in: *Algebra, Geometry and Mathematical Physics*, Springer-Verlag 2014 (Proceedings of the AGMP, Mulhouse, France, October 2011) <http://arxiv.org/abs/1206.2222>
- (33) Commutative and non-commutative parallelogram geometry: an experimental approach. <http://arxiv.org/abs/1305.6851>
- (34) Jordan Geometries - an Approach by Inversions. *Journal of Lie Theory* 24 (2014), No. 4, 1067–1113. <http://arxiv.org/abs/1308.5888>
- (35) Weil Spaces and Weil-Lie Groups. <http://arxiv.org/abs/1402.2619>
- (36) Universal associative geometry. <http://arxiv.org/abs/1406.1692>
- (37) Conceptual Differential Calculus. I : First order local linear algebra.
<http://arxiv.org/abs/1503.04623>
- (38) Conceptual Differential Calculus. II : Cubic higher order calculus.
<http://arxiv.org/abs/1510.03234>
- (39) A precise and general notion of manifold.
<http://arxiv.org/abs/1605.07745>
- (40) Lie Calculus. <https://arxiv.org/abs/1702.08282>

Proceedings, overview papers, and lecture notes

- (1) Jordan algebras and conformal geometry. P. 1 - 20 in: *Positivity in Lie Theory: Open Problems*. de Gruyter, Berlin 1998.
- (2) From Vector spaces to Symmetric Spaces. P. 99 - 109 in : *Lie Theory and its Applications in Physics*, World Scientific, Singapore 2000.
- (3) Symmetric spaces with Jordan structures. In : *Banach Center Publications* 55 (2002), 211-226
- (4) Generalized projective geometries. In : *An. Univ. din Timisoara Vol. XXXIX*, 2001 (Proceedings Fifth International Workshop on Differential Geometry and Its Applications).

- (5) Differential Geometry over General Base Fields and Rings. P. 95 - 102 in : Modern Trends in Geometry and Topology (Proceedings Seventh International Workshop on Differential Geometry and Its Applications, Cluj University Press 2006)
- (6) Difference Problems and Differential Problems. In : Contemporary Geometry and Topology and Related Topics, p. 73 - 86 (Proceedings Eighth International Workshop on Differential Geometry and Its Applications, Cluj University Press 2008). <http://arxiv.org/abs/0712.0321>
- (7) Jordan structures and non-associative geometry. P. 221 - 241 in: Trends and Developments in Infinite Dimensional Lie Theory (ed. K.-H. Neeb and A. Pianzola), Progress in Math. vol. 288, Birkhaeuser, New York 2011. <http://arxiv.org/abs/0706.1406>
- (8) On the Hermitian projective line as a home for the geometry of Quantum Theory. P. 14 - 25 in: AIP Conference Proceedings 1079 (Proceedings XXVII Workshop on Geometrical Methods in Physics, Białowieża 2008), American Institute of Physics, New York 2008. <http://fr.arxiv.org/abs/0809.0561>
- (9) Jordan and Lie Geometries. Archivum mathematicum 49 (2013), 275 - 293. Notes of lectures given at the 33rd Winter School Geometry and Physics in Srni, january 2013.

Book review

- (1) "A Taste of Jordan Algebras" by K. McCrimmon (In: SIAM Review Vol. 47, No. 1 (2005), pp. 172-174.)

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