

Curriculum Vitae

Rieuwert J. Blok

Contact

School of Mathematics
University of Birmingham
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Department of Mathematics and Statistics
Bowling Green State University
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Academic Degrees

1999 PhD in Mathematics (Doctor)
 Delft University of Technology, The Netherlands
1993 Master of Sciences in Mathematics (Doctorandus), Cum Laude
 University of Amsterdam, The Netherlands

Professional Experience

2015 - 2017 Horizon 2020 Marie Skłodowska Curie Fellow (Experienced Researcher)
 University of Birmingham (UK)
2013 Fall Sabbatical at the University of Birmingham, UK (research and teaching)
2011- ongoing Bowling Green State University, USA
 Associate Professor
2005-2011 Bowling Green State University
 Assistant Professor
2004-2005 Colorado State University
 Postdoctoral fellow (research and teaching)
2003-2004 University of Rome "Tor Vergata", Italy.
 Postdoctoral Research Fellow (research)
 EU funded research network "Algebraic Combinatorics in Europe" (ACE).
2000-2003 Michigan State University
 Visiting Research Instructor (research and teaching)
1999-2000 University of Siena, Italy
 Jr. Visiting Professor (research)
1998-1999 Randstad Automation Center, The Netherlands
 Programming Analyst.
1993-1999 Delft University of Technology (research and teaching)
 Assistent in Opleiding (Post-graduate researcher in preparation for PhD)

Fellowships

2015-2017 Horizon 2020 Marie Skłodowska Curie Fellowship from the Research Executive
 Agency of the European Commission. (€195k)
 Grant Proposal: "Kac-Moody groups and Computer Assistants in Mathematics"
 Joint with C. G. Hoffman (University of Birmingham)
2003 1-year Research Fellowship from "Algebraic Combinatorics Europe" (a European
 Union-funded research network) to visit the University of Rome
2000 Award of a 3-year Postdoctoral Fellowship, awarded collaboratively by the Dutch
 Science Foundation (NWO) and the Japanese Society for the Promotion of Science

Grants

2014	NSF Grant supporting the 49 th Annual Spring Topology and Dynamical systems conference, scheduled for May 2015 at Bowling Green State University (\$40k)
2011	Research in Pairs, Oberwolfach, (Germany)
2009	Research in Pairs, Oberwolfach, (Germany)
2008	Research In Teams, Banff International Research Station (Canada)
2008	GNSAGA grant (IT) to finance an extended visit to the University of Siena (€ 2500)
2006	Faculty Research Incentive Grant (Summer), Bowling Green State University (\$10,000)
1999	Research grant from the Istituto Nazionale di Alta Matematica (Italian Science Foundation) - grant proposal by A. Pasini and R J Blok. (£it 6,000,000)

Research Interests

Most recently I've worked on groups of Kac-Moody type and Twin-Buildings, and more general Curtis-Tits groups and amalgams. These groups are interesting for their group theoretic properties and the geometric and topological aspects of the objects they act upon such as twin-buildings and lattices.

Previously I have published papers on combinatorial aspects of pure mathematics, most specifically group theory, but also representation theory, geometry, and topology. I also have an interest for coding theory, graph and matroid theory and other discrete mathematics topics.

Current Research Topics

- a. Simplicity of Curtis-Tits groups (paper in preparation) and other properties.
- b. Applications of Curtis-Tits groups to presentations of finite simple groups and computer algebra.
- c. Applications of Curtis-Tits groups, multiple buildings, and their quotients to expander graphs and geometric group theory (papers in preparation).
- d. Existence of Curtis-Tits groups.
- e. Classification and existence of simplicial amalgams in concrete categories using non-commutative cohomology.

Publications

Articles accepted

- [BHo14c] Curtis-Tits groups of simply-laced type. **R. J. Blok** and C. G. Hoffman (accepted by **J. Comb. Th. Ser A**, subject to revisions).

Refereed and published articles

- [BGa14] Coxeter-Chein Loops, R. J. Blok and S. Gagola III, *Comm. Alg.* **42** (2014) no. 5, 2254—2268.
- [BHo14a] A classification of Curtis-Tits amalgams. **R. J. Blok** and C. G. Hoffman. in *Groups of Exceptional Type, Coxeter Groups and Related Geometries*, volume 149 of Springer Proceedings in Mathematics and Statistics (N. Sastry editor), pages 1--26. Springer, 2014.
- [BHo14b] Curtis-Tits groups generalizing Kac-Moody groups of type \tilde{A}_{n-1} . **R. J. Blok** and C. G. Hoffman. *Journal of Algebra*, **399** (2014), 978—1012.
- [BHo13] 1-cohomology of simplicial amalgams of groups. **R.J. Blok** and C. G. Hoffman. *J. Alg. Combin.* **37** (2013) no. 2, 381 – 400.
- [BIHoVd12] Expander graphs from Curtis–Tits groups, **R. J. Blok**, C. G. Hoffman and A. Vdovina, *J. Combin. Theory Series A*, **119** (2012), no. 3, 521-525.
- [BCa12] On Flips of Unitary Buildings I: Classification of Flips. **R. J. Blok** and B. Carr, *Advances in Geometry* **12** (2012), no. 1, 117-144.
- [BCo12] The generating rank of the unitary and symplectic grassmannians, **R. J. Blok** and B. N. Cooperstein, *Journal of Combinatorial Theory, Series A*, 119(1):1–13, 2012.
- [B11] Highest weight modules and polarized embeddings of shadow spaces. **R. J. Blok**. *J. Alg. Combin.* **34** (2011), no. 1, 67—113.
- [BHo11] Bass-Serre theory and counting rank two amalgams. **R. J. Blok** and C. G. Hoffman. *J. Group Theory* **14** (2011), no. 3, 389--400.
- [BCaP11] On the natural representation of the symplectic group. **R. J. Blok**, I. Cardinali, A. Pasini. *Bull. Belg. Math. Soc. Simon Stevin* **18** (2011), no. 1, 1--29.
- [BCo10] Projective Subgrassmannians of polar grassmannians. **R. J. Blok** and B.N. Cooperstein. *Bull Belg. Math. Soc. Simon Stevin*. Volume 17, no 4. (2010), 675-691.
- [BCaDP09] Polarized and homogeneous embeddings of dual polar spaces. **R. J. Blok**, I. Cardinali, B. De Bruyn, A. Pasini. *J. Alg. Combin* **30** (2009) no. 3, 381-399.
- [BHo09] A Curtis-Tits-Phan theorem for the twin-building of type \tilde{A}_{n-1} . **R. J. Blok** and C. G. Hoffman. *J. Algebra* **321** (2009), 1196–1224.
- [BCaD09] On the nucleus of the Grassmann embedding of the symplectic dual polar space $D\text{Sp}(2n, F)$, $\text{char}(F) = 2$. **R. J. Blok**, I. Cardinali, B. De Bruyn. *Europ J. Combin* **30** (2009), 468–472.
- [BHo08] A Quasi Curtis-Tits-Phan theorem for the symplectic group. **R. J. Blok** and C. G. Hoffman. *J. Algebra* **319** (2008), no. 11, 4662-4691.
- [B07] The generating rank of the symplectic grassmannians: hyperbolic and isotropic geometry. **R. J. Blok**. *Europ. J. Combin.* **28** (2007), 1368–1394.

Publications (cont)

- [BHa06] Extensions of isomorphisms for affine Grassmannians over F_2 . **R. J. Blok** and J. I. Hall. *Advances in Geometry* **6** (2006), no. 2, 225–241.
- [B05] Extensions of isomorphisms for affine dual polar spaces and strong parapolar spaces. **R. J. Blok**. *Advances in Geometry* **5** (2005), no. 4, 509–532.
- [BS05] Topological properties of activity orders for matroid bases. **R. J. Blok** and B. E. Sagan. *J. Combin. Theory Ser. B* **94** (2005), no. 1, 101–116.
- [B03] The generating rank of the symplectic line-grassmannian. **R. J. Blok**. *Beiträge Algebra Geom.* **44** (2003), no. 2, 575–580.
- [BP03] On absolutely universal embeddings. R. J. Blok and A. Pasini. *Discrete Math.* **267** (2003), no. 1-3, 45–62.
- [BBe03] Partial orders generalizing the weak order on Coxeter groups. C. D. Bennett and **R. J. Blok**. *J. Combin. Theory Ser. A* **102** (2003), no. 2, 331–346.
- [BDM03] A thin near hexagon with 50 points. **R. J. Blok**, B. De Bruyn and U. Meierfrankenfeld. *J. Combin. Theory Ser. A* **102** (2003), no. 2, 293–308.
- [BP01] Point-line geometries with a generating set that depends on the underlying field. **R. J. Blok** and A. Pasini. In *Finite geometries* (Fourth Isle of Thorns Conference, 2000), 1–25, Kluwer Acad. Publ., Dordrecht, 2001.
- [B01] Far from a point in the $F_4(q)$ geometry. **R. J. Blok**, *European J. Combin.* **22** (2001), no. 2, 145–163.
- [BBr98b] The geometry far from a residue. **R. J. Blok** and A. E. Brouwer. In *Groups and geometries* (Conference Siena, 1996), 29–38, Birkhäuser, Basel, 1998.
- [BBr98a] Spanning point-line geometries in buildings of spherical type. **R. J. Blok** and A. E. Brouwer. *J. Geom.* **62** (1998), no. 1-2, 26–35.

PhD Thesis

On Geometries related to Buildings (1999, Delft University of Technology), Book of 139 pages.

Master's Thesis

Self-Dual Goppa Codes on Supersingular Curves (1993, University of Amsterdam).

Research Visits

Invited visits

University of Birmingham, UK (August – December 2013)
University of Birmingham, UK (June 2010)
University of Birmingham, UK (July 2009)
Università di Siena, Italy (June-July 2008)
University of Birmingham, UK (June 2008)
Università di Siena, Italy (June-July 2007)

Supported visits

Research in Pairs Mathematisches Forschungsinstitut Oberwolfach (2011)
Research in Pairs Mathematisches Forschungsinstitut Oberwolfach (2009)
Research In Teams at BIRS (Banff International Research Station, Canada) (2008)