

# Curriculum Vitae

## Rieuwert J. Blok

### **Contact**

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**

2005-present 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**

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**

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

I have published papers on combinatorial aspects of pure mathematics, most specifically group theory, but also representation theory, geometry, and topology. I'm interested in coding theory, graph and matroid theory and other discrete mathematics topics. Most recently I've worked on groups of Kac-Moody type and Twin-Buildings, as well as more general groups and amalgams.

## Current Research Topics

- 1) Classification of simplicial amalgams in concrete categories using non-commutative cohomology (joint with C. G. Hoffman, University of Birmingham) [BHo10b] paper in preparation]
- 2) A geometric approach to irreducible representations of Groups of Lie type in positive characteristic (joint with A. Pasini, I. Cardinali, University of Siena, Italy). [Two papers published, one accepted recently]
- 3) Classification of Curtis-Tits amalgams for groups of Kac-Moody type and generalizations [Two papers submitted, one accepted]
- 4) Amalgam presentations for Moufang loops (joint with S. Gagola, Bowling Green State University) [paper in preparation]
- 5) Models for twin-buildings (joint with C. D. Bennett (Loyola Marymount), C.G. Hoffman, S.V. Shpectorov) [paper in preparation]

## Publications

### Submitted Research Articles (4)

- [BHo09c] Curtis-Tits groups generalizing Kac-Moody groups of type  $\tilde{A}_n$ . **R. J. Blok** and C. G. Hoffman.
- [BHo09a] A classification of Curtis-Tits amalgams. **R. J. Blok** and C. G. Hoffman.
- [BCo09] The generating ranks of the unitary and symplectic Grassmannians. **R. J. Blok** and B.N Cooperstein.
- [BHoV10] Expander graphs from Curtis Tits groups. R.J. Blok, C. G. Hoffman, A. Vdovina.

### Refereed and Published Research Articles (21)

- [BCa10] On Flips of Unitary Buildings I: Classification of Flips. **R. J. Blok** and B. Carr. To appear in Advances in Geometry (2011).
- [B11] Highest weight modules and polarized embeddings of shadow spaces. **R. J. Blok**. To appear in J. Alg. Combin (2011)
- [BHo10] Bass-Serre theory and counting rank two amalgams. **R. J. Blok** and C. G. Hoffman. To appear in J. Group Theory (2010)
- [BCaP10] On the natural representation of the symplectic group. **R. J. Blok**, I. Cardinali, A. Pasini. To appear in Bull. Belg. Math. Soc. (2010).
- [BCo10] Projective Subgrassmannians of polar grassmannians. **R. J. Blok** and B.N. Cooperstein. To appear in Bull. Belg. Math. Soc. (2010).
- [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.
- [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.
- [BeB03] 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.
- [B01] Far from a point in the  $F_4(q)$  geometry. **R. J. Blok**, *European J. Combin.* **22** (2001), no. 2, 145–163.
- [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.
- [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 Lectures (selected)**

**Invited addresses** London Mathematical Society triangle meeting on groups and applications, UK (2008)  
Oberwolfach Workshop on Groups and Geometries (2008)  
Buildings and Groups”, Belgium (2007)  
Conference in honor of Stanley Payne, Ohio (2007)  
American Mathematical Society, Special Session on Lattice Theory, Baltimore (2003)

**Invited Colloquia** Bowling Green State University (2010, 2005)  
Wayne State University, MI (2005)  
University of Wyoming (2005)  
Linköping University, Sweden (2004)  
Colorado State University (2003)  
Kansas State University (2002)  
Bowling Green State University (2001)

**Invited Seminars** Michigan State University (2010)  
Ghent University (2009)  
University of Birmingham (2009)  
University of Birmingham (2008)  
Michigan State University (2007)  
University of Birmingham (2007)  
University of Toledo, (2007)  
Michigan State University, (2006)  
Ohio State University (2006)  
Università di Siena (IT) (Italian) (2004)  
Universität Marburg, Germany (2004)  
Royal Institute of Technology [KTH] Stockholm, Sweden (2004)  
Chalmers University, Sweden, Göteborg (2004)  
Université Lyon 1, France, seminar (French) (2004)  
Università di Siena (IT) (Italian) (1999)  
Università degli studi di Firenze (IT) (Italian) (1999)  
Technical University Eindhoven, Discrete Mathematics Seminar (1995)

### **Contributed Conference Talks**

Combinatorics 2006, Ischia, Italy (2006)  
International Conference on Incidence Geometry at La Roche, Belgium (2004)  
52nd Séminaire Lotharingien de Combinatoire (Ottrott, France) (2004)  
Eurocomb 03 (accepted) (2003)  
Geometric and Algebraic Combinatorics 2, Netherlands (2002)  
Fourth Isle of Thorns Conference, United Kingdom (2000)  
Finite Geometry and Combinatorics, Third International Conference, Belgium (1997)  
Annual meeting of the Dutch mathematical society, Wageningen, Netherlands (1997)  
Joint meeting American Mathematical Society and Benelux, Belgium (1996)

## **Research Visits**

**Invited visits** 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 Oberwolfach, Germany (Fall 2009).  
Research In Teams at BIRS (Banff International Research Station  
Banff, Canada) (Summer 2008)