

# Curriculum Vitae

## Rieuwert J. Blok

### Contact

Department of Mathematics and Statistics  
Bowling Green State University  
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**Academic Degrees** PhD in Mathematics (Doctor) Spring 1999  
Delft University of Technology, The Netherlands  
Master of Sciences in Mathematics (Doctorandus), Cum Laude, Summer 1993  
University of Amsterdam, The Netherlands

### Professional Experience

08/2005-present Assistant Professor, Bowling Green State University

08/2004-07/2005 Colorado State University  
Postdoctoral fellow (research and teaching).

09/2003-08/2004 University of Rome "Tor Vergata", Italy.  
Postdoctoral Research Fellow (research)  
EU funded research network "Algebraic Combinatorics in Europe" (ACE).

08/2000-08/2003 Michigan State University  
Visiting Research Instructor (research and teaching)

01/2000-06/2000 Randstad Automation Center, The Netherlands  
Programming Analyst.

08/1999-12/1999 University of Siena, Italy  
Jr. Visiting Professor (research)

12/1998-07/1999 Randstad Automation Center, The Netherlands  
Programming Analyst.

09/1993-08/1999 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)

### Awards/Nominations

2008 Nominated for Outstanding Young Scholar award BGSU.

### **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.

### **Teaching experience**

Various levels of undergraduate courses. Calculus for first-year science students. Large lectures (>>80 students) of Calculus II for science students, with supervision of 8 teaching assistants. Content courses with introduction to proof writing for sophomore and junior math majors in Linear Algebra, Algebra and Number Theory, Analysis, Logic, Discrete Mathematics. Instruction of computer labs and use of calculators. Graduate Courses: Combinatorics, Algebra I (M633), Algebra II (M634), Topics course in group theory (M682), Advanced Algebra (M733/M734). Number Theory (M501) Abstract Algebra (M503/M504). See below for more details.

### **Service**

Departmental	Member of Personnel Committee (Since 08/2008) Member of Graduate Committee (Since 08/2007), Organizer Algebra Seminar (2007-2008). Algebra Hiring committee member (Spring 2007); Chair Colloquium Committee (06/2006-06/2007); Development and grading of entrance and final examinations (Since 08/2005); Student advisor of PhD and Master students (Since 08/2005) Member and chair on various preliminary examination committees, Chair doctoral committee (Since 08/2005).
Institutional	Graduate College representative on PhD thesis in Photochemistry (11/2008). University Library Committee member (2007-2008). Judge for scholarships at the State science day, Ohio Academy of Science. Advisor Kappa-Mu-Epsilon Chapter BGSU.
Scholarly	Referee of articles for several journals: Journal of Combinatorial Theory Series A. European Journal of Combinatorics Electronic Journal of Combinatorics Journal of Algebraic Combinatorics Advances in Geometry Discrete Mathematics Journal of Group Theory

### **Professional Societies**

Since 2000	Member of the American Mathematical Society
Since 1995	Member of the Dutch Mathematical Society (Wiskundig Genootschap)

## Current Research

- 1) A geometric approach to irreducible representations of Groups of Lie type in positive characteristic (joint with A. Pasini, I. Cardinali, University of Siena, Italy). [Three papers submitted]
- 2) Phan-type amalgams of Kac-Moody groups with arbitrary diagrams. (joint with C.G. Hoffman, University of Birmingham, UK) [three papers submitted]
- 3) q-Clifford Algebras and Super algebras related to twists of Kac-Moody groups (joint with C.G. Hoffman) [paper in preparation].
- 4) Models for twin-buildings (joint with C. D. Bennett (Loyola Marymount), C.G. Hoffman, S.V. Shpectorov)[paper in preparation]
- 5) A Phan-Curtis-Tits theorem for the unitary group [PhD research B. Carr under my supervision]

## Publications

### Submitted Research Articles (6)

On generalizations of Kac-Moody groups, R. J. Blok and C. G. Hoffman. Submitted November 2009.

Bass-Serre theory and counting rank two amalgams, R. J. Blok and C. G. Hoffman. Submitted October 2009.

Highest weight modules and polarized embeddings of shadow spaces, R. J. Blok. Submitted October 2009.

Curtis-Tits amalgams and presentations of locally split Kac-Moody groups. R. J. Blok and C. G. Hoffman. Submitted July 2009.

On the natural representation of the symplectic group. R. J. Blok, I. Cardinali, A. Pasini. Submitted, 2009.

The generating ranks of the unitary and symplectic Grassmannians, R. J. Blok and B.N Cooperstein (UCSC) submitted January 2008.

### Refereed and Published Research Articles (17)

Projective Subgrassmannians of polar grassmannians, R. J. Blok and B.N. Cooperstein (UCSC). To appear in Bull. Belg. Math. Soc. (2009).

Polarized and homogeneous embeddings of dual polar spaces. R.J. Blok, I. Cardinali (U. of Siena, IT), B De Bruyn (U. of Gent, BE), A. Pasini (U. of Siena, IT). J. Alg. Combin **30** (2009) no. 3, pages 381-399

A Curtis-Tits-Phan theorem for the twin-building of type  $\tilde{A}_{n-1}$ . R. J. Blok and C. G. Hoffman (U. Birmingham, UK) Journal of Algebra **321** (2009) 1196–1224

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 (U. of Siena, IT), B De Bruyn (U. of Gent, BE), Europ J. Combin **30** (2009) 468–472.

A Quasi Curtis-Tits-Phan theorem for the symplectic group, R. J. Blok and C. G. Hoffman. J. Algebra **319** (2008), no. 11, pages 4662-4691.

The generating rank of the symplectic grassmannians: hyperbolic and isotropic geometry. R. J. Blok, Europ. J. Combin. **28** (2007), 1368-1394.

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.

Extensions of isomorphisms for affine dual polar spaces and strong parapolar spaces, R. J. Blok, Advances in Geometry **5** (2005), no. 4, 509--532

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

### **Refereed and Published Research Articles (continued)**

The generating rank of the symplectic line-grassmannian, R. J. Blok, *Beiträge Algebra Geom.* **44** (2003), no. 2, 575--580

On absolutely universal embeddings R. J. Blok and A. Pasini, *Discrete Math.* **267** (2003), no. 1-3, 45--62

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

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.

Point-line geometries with a generating set that depends on the underlying field R. J. Blok and A. Pasini, in *Finite geometries*, 1--25, Kluwer Acad. Publ., Dordrecht, 2001

Far from a point in the  $F_4(q)$  geometry R. J. Blok, *European J. Combin.* **22** (2001), no. 2, 145--163

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

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 conferences** 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 (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)  
Michigan State University (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)

### **Regular presenter in seminars at BGSU**

## Research Visits

**Invited visits** 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)