

## CURRICULUM VITAE

**Personal:**

German citizen. Born May 25, 1954, Trier, Germany.  
Married to Anne Birte Lorentzen, three daughters, one grand-daughter.

**Academic Degrees:**

1975: Dipl. Math. (MSC, Mathematics and Computer Science), Universität des Saarlandes, Saarbrücken, Germany.  
1981: Dr. rer.nat. (PhD) Georg-Wilhelms-Universität, Göttingen, Germany.  
2014: D.Sc. (dr.scient.), Aalborg University, Denmark.

**Academic Positions:**

1977–1984: Research Assistant, University of Göttingen, Germany.  
1983: Assistant Professor, Technical University, Lyngby, Denmark.  
1983–1984: Postdoc, University of Aarhus, Denmark.  
1984–2015: Associate Professor, Aalborg University, Denmark.  
2015–: Professor with special responsibilities, Aalborg University, Denmark.

**Personal home page – including list of publications:**

`people.math.aau.dk/~raussen`

**Visiting Positions:**

Paris XI, Orsay, France  
UNAM, Mexico  
Univ. Göttingen, Germany  
Institut Mittag-Leffler, Djursholm, Sweden  
Brown University, Providence, RI, USA  
Ecole Polytechnique, Paris, France  
Institute for Mathematics and its Applications, Minneapolis, MN, USA  
Institute for Computational and Experimental Research in Mathematics, Brown University, Providence, RI, USA

**Project participation:**

2002–4: Moduli Spaces in Topology and Geometry, SNF/FNU  
2005–7: Topology and Quantization of Moduli Spaces, FNU  
2008–11: Symmetry and Moduli Problems in Topology, FNU  
2011: COMETS. Danish-French cooperation project, French embassy Copenhagen  
2011-15: Applied and Computational Algebraic Topology, ESF; chair:  
<http://www.esf.org/acad>, <http://acad.lix.polytechnique.fr>  
2017: Applied and Computational Algebraic Topology, Hausdorff Research Institute for Mathematics <http://www.him.uni-bonn.de/programs/future-programs/future-trimester-programs/acad-2017/description/>

**Conference organization:**

One of the main organizers of the workshop series *Geometric and Topological Methods in Computer Science*, 1999–. <http://people.math.aau.dk/~raussen/GETCO/GETCO10>

Member of organizing committee of "Algebraic Topological Methods in Computer Science III", Paris 2008. <http://www.lix.polytechnique.fr/~sanjeevi/atmcs/>

Organizer of minisymposium "Applied and Computational Algebraic Topology", 6th European Congress of Mathematics, Krakow, Poland, 2012.

<http://www.6ecm.pl/en/programme/mini-symposia>

Convenor of the Scientific Committee of the Joint EMS-DMF Mathematical Weekend, Aarhus, Denmark, 2013. <http://projects.au.dk/emswweekend/committee/>

Member of the Scientific Committee of "Dynamics, Topology and Computations", Bedlewo, Poland, 2015. <http://dytocomp.matinf.uj.edu.pl/>

Member of the Scientific and of the Organizing Committee of "Geometric and Topological Methods in Computer Science" 2015, Aalborg, Denmark.

<http://people.math.aau.dk/~fajstrup/KONFERENCER/GETCO2015/>  
and of "Accelerating Applied Topology" 2016, Aalborg, Denmark.

<http://people.math.aau.dk/~fajstrup/KONFERENCER/ACAT2016/>

Scientific Committee "Applied and Computational Algebraic Topology",

<http://www.him.uni-bonn.de/programs/future-programs/future-trimester-programs/acat-2017/description/>

**Recent invited talks:**

2007: Neuchatel. DMV-GDM Berlin. AMS-PTM Warsaw. Göttingen.

2008: Oberwolfach. Paris. Baia Mare, Romania. UA Madrid. Bremen.

2009: Trondheim.

2010: Aalborg. Münster.

2011: Cergy-Pontoise, France. Zürich.

2012: Bedlewo & Krakow, Poland.

2013: Warsaw. IMA Minneapolis.

2014: Lyon. Technion, Haifa. Copenhagen.

2015: AMS-EMS-SPM Porto, IST Austria.

2016: Nordic Congress, Stockholm.

**Ph. D. students supervised:**

2002–2005: Rafael Wisniewski

2002–2005: Ulrich Fahrenberg

2004–2007: John-Josef Leth

**Editorial and board responsibilities:**

1999–2003: Matilde, Newsletter of Danish Mathematical Society (editor-in-chief: 2002–2003)

2003–2012: Newsletter of the European Mathematical Society (editor-in-chief 2003–2008)

2005–: J. Homotopy Relat. Struct.

2002–: Proceedings "Geometric & Topological Methods in Concurrency Theory", Electr. Notes TCS

1985–2001: Study board Aalborg (1985–1988, 1990–1991, 1995–2001)

1992–2016: Department board (1992–1996, 2005–2016)

- 2009-2016: Executive Committee of the European Mathematical Society  
<http://www.euro-math-soc.eu/>
- 2011-2016: Vice president of the EMS
- 2011–2015: Chairman of the steering committee of the ESF Research Network Programme  
“Applied and Computational Algebraic Topology” (ACAT)  
<http://www.esf.org/index.php?id=8764>
- 2013, 2015: Reviewer of a project under the 7th framework programme of the European Community  
for research. technological development and demonstration activities.
- 2014-: External evaluator, EU, H2020-FETOPEN.
- 2016-: Editor of IMU-Net <http://www.mathunion.org/imu-net>, International  
Mathematical Union.

## LIST OF PUBLICATIONS

**Doctoral dissertation.**

M. Raussen. Contributions to directed algebraic topology – with inspirations from concurrency theory. Aalborg University, Department of Mathematical Sciences, 2014. xv+63 pp.

**Mathematical Papers.** In *reverse* chronological order, based on Mathematical Reviews and zbMATH:

- [1] M. Raussen and K. Ziemiański. Homology of spaces of directed paths on euclidean cubical complexes. *J. Homotopy Relat. Struct.*, 9(1):67–84, 2014.
- [2] M. Raussen. Simplicial models for trace spaces II: General higher-dimensional automata. *Algebr. Geom. Topol.*, 12(3):1745–1765, 2012.
- [3] M. Raussen. Execution spaces for simple higher dimensional automata. *Appl. Algebra Engrg. Comm. Comput.*, 23:59–84, 2012.
- [4] L. Fajstrup, É. Goubault, E. Haucourt, S. Mimram, and M. Raussen. Trace Spaces: An Efficient New Technique for State-Space Reduction. In H. Seidl, editor, *Programming Languages and Systems*, volume 7211 of *Lecture Notes in Computer Sci.*, pages 274–294. ESOP 2012, Springer-Verlag, 2012.
- [5] M. Raussen. Simplicial models for trace spaces. *Algebr. Geom. Topol.*, 10:1683–1714, 2010.
- [6] M. Raussen. Trace spaces in a pre-cubical complex. *Topology Appl.*, 156(9):1718–1728, 2009.
- [7] M. Raussen. Reparametrizations with given stop data. *J. Homotopy Relat. Struct.*, 4(1):1–5, 2009.
- [8] U. Fahrenberg and M. Raussen. Reparametrizations of continuous paths. *J. Homotopy Relat. Struct.*, 2(2):93–117, 2007.
- [9] M. Raussen. Invariants of directed spaces. *Appl. Categ. Struct.*, 15(4):355–386, 2007.
- [10] R. Wisniewski and M. Raussen. Geometric analysis of nondeterminacy in dynamical systems. *Acta Inf.*, 43(7):501–519, 2007.
- [11] M. Raussen. Deadlocks and dihomotopy in mutual exclusion models. *Theor. Comput. Sci.*, 365(3):247–257, 2006.
- [12] L. Fajstrup, M. Raussen, and É. Goubault. Algebraic topology and concurrency. *Theor. Comput. Sci.*, 357(1–3):241–278, 2006.
- [13] L. Fajstrup, M. Raussen, É. Goubault, and E. Haucourt. Components of the fundamental category. *Appl. Categ. Struct.*, 12(1):81–108, 2004.
- [14] M. Raussen. A second look at normal curvature. *Normal*, 51(2):59–62, 2003.
- [15] M. Raussen. State spaces and dipaths up to dihomotopy. *Homology Homotopy Appl.*, 5(2):257–280, 2003.
- [16] É. Goubault and M. Raussen. Dihomotopy as a tool in state space analysis. Rajsbaum, Sergio (ed.), *LATIN 2002: Theoretical informatics. 5th Latin American symposium, Cancun, Mexico, April 3–6, 2002. Proceedings*. Berlin: Springer. Lecture Notes in Comput. Sci. 2286, 16-37, 2002.

- [17] M. Raussen. Symmetries on manifolds, deformations and rational homotopy: A survey. Bak, Anthony (ed.) et al., Current trends in transformation groups. Dedicated to the memory of Professor Katsuo Kawakubo. Dordrecht: Kluwer Academic Publishers. K-Monogr. Math. 7, 167-179, 2002.
- [18] M. Raussen. On the classification of dipaths in geometric models for concurrency. *Math. Struct. Comput. Sci.*, 10(4):427–457, 2000.
- [19] M. Raussen. Cyclic group actions on manifolds from deformations of rational homotopy types. *Math. Ann.*, 312(4):737–760, 1998.
- [20] L. Fajstrup, É. Goubault, and M. Raussen. Detecting deadlocks in concurrent systems. In *CONCUR'98: concurrency theory (Nice)*, volume 1466 of *Lecture Notes in Comput. Sci.*, pages 332–347. Springer, Berlin, 1998.
- [21] E. Laitinen and M. Raussen. Homotopy types of locally linear representation forms. *Manuscr. Math.*, 88(1):33–52, 1995.
- [22] M. Raussen. Circle actions on rational homology manifolds and deformations of rational homotopy types. *Trans. Am. Math. Soc.*, 347(1):137–153, 1995.
- [23] M. Raussen. Rational cohomology and homotopy of spaces with circle action. Algebraic topology, Proc. Conf., S. Feliu de Guíxols/Spain 1990, *Lecture Notes in Math.* 1509, 313-325 (1992)., 1992.
- [24] I. Madsen and M. Raussen. Locally linear representation forms. *Osaka J. Math.*, 27(3):567–591, 1990.
- [25] I. Madsen and M. Raussen. Smooth and locally linear G homotopy representations. Algebraic topology, Proc. Conf., Göttingen/Ger. 1984, *Lecture Notes in Math.* 1172, 130-156 (1985)., 1985.
- [26] J.M. Møller and M. Raussen. Rational homotopy of spaces of maps into spheres and complex projective spaces. *Trans. Am. Math. Soc.*, 292:721–732, 1985.
- [27] P. Löffler and M. Raussen. Symmetrien von Mannigfaltigkeiten und rationale Homotopietheorie. *Math. Ann.*, 271:549–576, 1985.
- [28] M. Raussen. Non-orthogonalisable vector fields on spheres. *Proc. Edinb. Math. Soc., II. Ser.*, 27:275–281, 1984.
- [29] M. Raussen and R. Wiegmann. *Liftings, homotopy liftings and localization applied to vector field and immersion theory*, volume 6 of *Osnabrücker Schriften zur Mathematik. Reihe M: Mathematische Manuskripte [Osnabrück Publications in Mathematics. Series M: Mathematical Manuscripts]*. Universität Osnabrück Fachbereich Mathematik, Osnabrück, 1984.
- [30] M. Raussen. Some invariants for vector field problems. Topology, Proc. spec. Semin., Vol. 4, México 1982, 163-185, 1982.
- [31] M. Raussen. Symmetries on simply-connected manifolds. Topology, Proc. spec. Semin., Vol. 4, Mexico 1982, 117-133, 1982.
- [32] M. Raussen. Liftings and homotopy liftings into fibre bundles: vector fields, unstable vector bundles, immersions. Topology, Proc. spec. Semin., Vol. 2, México 1981, 133-150, 1981.
- [33] M. Raussen. *Liftungen und Homotopieliftungen in Faserbündel: Vektorfelder, instabile Vektorraumbündel, Immersionen. (Dissertation)*. PhD thesis, Mathematisch-Naturwissenschaftliche Fakultät der Georg-August- Universität zu Göttingen. XIII, 113 S. , 1981.
- [34] M. Raussen and L. Smith. A geometric interpretation of sphere bundle boundaries and generalized J- homomorphisms with an application to a diagram of I. M. James. *Q. J. Math., Oxf. II. Ser.*, 30:113–117, 1979.
- [35] M. Raussen. Hurewicz isomorphism and Whitehead theorems in pro-categories. *Arch. Math.*, 30:153–164, 1978.

**Book.** L. Fajstrup, É. Goubault, E. Haucourt, S. Mimram, and M. Raussen, *Directed Algebraic Topology and Concurrency*, 2016. ISBN 978-3-319-15397-1, Cham: Springer. <http://www.springer.com/la/book/9783319153971>

**Article in preparation.** R. Meshulam and M. Raussen, Homology of Spaces of Directed Paths in Euclidean Pattern Spaces. arXiv: 1512.05978. Accepted for publication.

**Interviews and articles in journals of mathematical societies.** In *reverse* chronological order:

- [36] M. Raussen and Chr. Skau. Interview with Abel Laureate Sir Andrew Wiles. *Eur. Math. Soc. Newsl.*, 101:29–38, 2016.
- [37] M. Raussen and Chr. Skau. Interview with Abel Laureate Louis Nirenberg. *Eur. Math. Soc. Newsl.*, 98:33–38, 2015. Reprinted in *Notices Amer. Math. Soc.* **63** (2016), no. 2, 135–140.
- [38] M. Raussen and Chr. Skau. Interview with Abel Laureate John F. Nash Jr. *Eur. Math. Soc. Newsl.*, 97:28–33, 2015. Reprinted in *Notices Amer. Math. Soc.* **63** (2016), no. 5, 486–491.
- [39] M. Raussen and Chr. Skau. Interview with Yakov Sinai – Abel laureate 2014. *Eur. Math. Soc. Newsl.*, 93:12–19, 2014. Reprinted in *Notices Amer. Math. Soc.* **62** (2015), no. 2, 152–160.
- [40] M. Raussen and Chr. Skau. Interview with Abel laureate Pierre Deligne. *Eur. Math. Soc. Newsl.*, 89:15–23, 2013. Reprinted in *Notices Amer. Math. Soc.* **61** (2014), no. 2, 177–185.
- [41] M. Raussen and Chr. Skau. Interview with Abel laureate Endre Szemerédi. *Eur. Math. Soc. Newsl.*, 85:39–48, 2012. Reprinted in *Notices Amer. Math. Soc.* **60** (2013), no. 2, 221–231.
- [42] M. Raussen. Computational topology [book review]. *Eur. Math. Soc. Newsl.*, 82:58–59, 2011.
- [43] M. Raussen and Chr. Skau. Interview with Abel laureate John Milnor. *Eur. Math. Soc. Newsl.*, 81:31–40, 2011. Reprinted in *Notices Amer. Math. Soc.* **59** (2012), no. 3, 400 – 408.
- [44] M. Raussen and Chr. Skau. Interview with Abel laureate John Tate. *Eur. Math. Soc. Newsl.*, 77:41–48, 2010. Reprinted in *Notices Amer. Math. Soc.* **58** (2011), no. 3, 444 – 452.
- [45] M. Raussen and Chr. Skau. Interview with Abel laureate Mikhail Gromov. *Eur. Math. Soc. Newsl.*, 73:19–30, 2009. Reprinted in *Notices Amer. Math. Soc.* **57** (2010), no. 3, 391 – 403.
- [46] M. Raussen. Interview with Jacques Dixmier. *Eur. Math. Soc. Newsl.*, 72:34–41, 2009.
- [47] M. Raussen. Invitation to topological robotics [book review]. *Eur. Math. Soc. Newsl.*, 72:46–47, 2009.
- [48] M. Raussen and Chr. Skau. Interview with John G. Thompson and Jacques Tits. *Eur. Math. Soc. Newsl.*, 69:31–38, 2008. Reprinted in *Notices Amer. Math. Soc.* **56** (2009), no. 4, 471 – 478.
- [49] M. Raussen and A. Valette. An interview with Beno Eckmann. *Eur. Math. Soc. Newsl.*, 66:31–37, 2007. Reprinted in *math.ch/100* (Eds: B. Colbois, C. Riedtmann, V. Schroeder), EMS publishing house (2010), 389–401.
- [50] M. Raussen and Chr. Skau. Interview with Srinivasa Varadhan. *Eur. Math. Soc. Newsl.*, 65:33–40, 2007. Reprinted in *Notices Amer. Math. Soc.* **55** (2008), no. 2, 238–246.
- [51] U. Persson and M. Raussen. Two mathematicians forced to resign at Uppsala University, Sweden. *Eur. Math. Soc. Newsl.*, 64:15, 2007.
- [52] M. Raussen and Chr. Skau. Interview with Abel Prize recipient Lennart Carleson. *Eur. Math. Soc. Newsl.*, 61:31–36, 2006. Reprinted in *Notices Amer. Math. Soc.* **54** (2007), no. 2, 223–229 and *Mitt. Dtsch. Math.-Ver.* **14** (2006), no.4, 206–212.
- [53] M. Raussen and Chr. Skau. Interview with Peter D. Lax. *Eur. Math. Soc. Newsl.*, 57:24–31, 2005. Reprinted in *Notices Amer. Math. Soc.* **53** (2006), no. 2, 223–229.
- [54] M. Raussen and Chr. Skau. Interview with Michael Atiyah and Isadore Singer. *Eur. Math. Soc. Newsl.*, 53:24–30, 2004. Reprinted in *Notices Amer. Math. Soc.* **52** (2005), no. 2, 225–233 and *Mitt. Dtsch. Math. Ver.* **12** (2004), no. 4, 272–281.
- [55] M. Raussen and Chr. Skau. Interview with Jean-Pierre Serre. *Eur. Math. Soc. Newsl.*, 49:18–20, 2003. Reprinted in *Notices Amer. Math. Soc.* **51** (2004), no. 2, 210–214 and *Nieuw Arch. Wisk* (5) **5** (2004) no. 1, 38–41.

Many of the interviews have been translated into Chinese and published in *Mathematical Advance in Translation* sponsored by the Academy of Mathematics and Systems Science within the Chinese Academy of Sciences.