

## CURRICULUM VITAE FOR LISBETH FAJSTRUP

**Personal:** Danish citizen. Born March 8, 1960.

**Orcid ID:** 0000-0003-4936-1176

### **Research profile**

With a background in algebraic topology, my research is on the intersection between mathematics and its applications. In 1996, together with two colleagues - at AAU and at ENS Paris - I founded a new mathematical research area, *directed algebraic topology* to address research questions in concurrency theory. The area is still growing and we address questions in both mathematics - curiosity driven - and in computer science - application driven.

Applied algebraic topology in general is a growing field. My connections to, understanding of, and interest in all these applications, such as topological data analysis, the dissemination of these ideas and the possible new applications, is a central part of my profile.

I am a strong communicator of ideas, be it mathematical ideas and techniques to applied researchers or vice versa.

Moreover, I contribute to research in other fields, whenever a mathematical expertise is useful, be it algebraic topology or not.

### **Academic Degrees:**

1988: Cand. Scient. (M.S.), Mathematics with physics minor. University of Aarhus.

1992: Ph.D., Mathematics. University of Aarhus.

### **Academic Positions:**

1992–1996: Assistant Professor, University of Aalborg, Department of Mathematics.

1996–: Associate Professor, University of Aalborg, Department of Mathematics.

### **Visiting Positions, recent:**

October–November 2013: Visiting Member of Institute for Mathematics and its Applications, Minneapolis, Minnesota.

September 2017: Invited researcher. Hausdorff Research Institute for Mathematics. Program: Applied and Computational Algebraic Topology. Bonn, Germany.

### **Conference organization, research administration and scientific committees:**

- : EU Cost Action 17139 EUTOPIA, European Topology Interdisciplinary Action. Management committee member for Denmark. 2018–2022
- : Geometric and Topological Methods in Computer Science, GETCO, several times since 2000 latest 2020.

- : Summerschool, MiLyon, Lyon France, January 2014.
- : Summerschool, Mathematics of Planet Earth. ICTP Trieste, May 27- June 1 2013.
- : Special session on Algebraic Topology at the EMS weekend in Aarhus. 5-7 April 2013
- : Applications of Combinatorial Topology to Computer Science. March 18-23, 2012. Schloss Dagstuhl, Germany. <http://www.dagstuhl.de/en/program/calendar/semhp/?semnr=12121>
- : ACAT, Applied and Computational Algebraic Topology in Aalborg. August 2012
- : Algebraic Topological Methods in Computer Science III, ATMCS III, Paris, 2008. <http://www.lix.polytechnique.fr/~sanjeevi/atmcs/>

#### **Recent invited talks:**

- September 2018: *GETCO'2018 Geometric and Topological Methods in Computer Science* Oaxaca, Mexico. (Plenary talk.)
- July 2018: *Methods and Tools for Distributed Hybrid Systems*. Ecole Polytechnique, Paris, France. (Plenary talk.)
- December 2017: *Women in Topology*. MSRI, Berkeley, USA. (Plenary talk)
- August 2017: *Applied Algebraic Topology 2017*. Sapporo Japan. (Plenary talk)
- May 2017: *Conference on Applied and Computational Algebraic Topology*. Hausdorff Research Institute for Mathematics. Bonn, Germany. (Plenary talk)
- July 2016: *ATMCS 2016. Applied Topology. Methods Computation and Science*. Torino, Italy. (Plenary talk)
- April 2016: *BAMC British Applied Mathematics Colloquium*. University of Oxford. Great Britain.
- December 2015: *Second School and Conference on Topological Data Analysis*. Queretaro, Mexico.(Plenary talk)
- July 21-27 2013: *Applied Topology, Bedlewo 2013* Bedlewo, Poland. (Plenary talk)
- July 15-19 2013: *Applied and Computational Algebraic Topology* University of Bremen, Bremen, Germany. (Plenary talk.)
- December 14 2012: *Math Extravaganza* IST-Austria, Kloster Neuburg, Austria. (Plenary talk)

#### **Gymnasiekontakt og formidling**

- 2019 – Medlem af Danmarks MatematikUndervisningsKommite, DMUK.
- 2007 – Medlem af UVM's Fagligt Forum for matematik på stx og hf. Efteråret 2016 Medlem af UVMS Matematikkommission vedr. matematikfaget efter 2017-gymnasireformen.
- 2010 – 2011 Medlem af UVM's arbejdsgruppe om matematikfærdigheder på langs og tværs af uddannelsessystemet.

2007 – 2010 Medlem af bestyrelsen for Vesthimmerlands Gymnasium.

2003 – 2005 Fagkonsulentens følgegrupper vedr. matematikfaget i  
2005-gymnasireformen.

**Dissemination - examples:**

2006 – 2011 Author of the Danish Numb3rs blog (200+ entries)

<http://numb3rs.math.aau.dk> Supported by the FNU, The  
Danish Research Council for Science.

2017 – Main author of <http://blog.math.aau.dk> (70+ entries)

2016 Film about my research for high school students.

<https://youtu.be/1Y4uDDtFda0>

**Actions for diversity**

2017-now: Chairing a research group within my area for young women.

Starting point: MSRI meeting for Women in Topology, Berkeley,  
USA. So far. One publication.

2014-now: Vice Chair, the European Mathematical Society Committee for  
Women in Mathematics.

2010-2014: Member of the European Mathematical Society Committee for  
Women in Mathematics.

2009-2013: Deputy Convenor. European Women in Mathematics.

1997-2007: Regional Coordinator for Denmark. European Women in  
Mathematics.

## Recent preprints and publications

### Preprints

- 2019: R. Čerimagić, L. Fajstrup, T.O. Andersen, P. Johansen. *An Isogeometric Analysis Approach to Kinematics of Spatial Rigid Multibody Systems with Imperfect Joints*. Submitted.
- 2019: R. Belton, R. Brooks, S. Ebli, L. Fajstrup, B.T. Fasy, C. Ray, N. Sanderson, E. Vidaurre. *Towards Directed Collapsibility*. Preprint ArXiv:1902.01039. To appear in AWM-Springer Series.
- 2018: L. Fajstrup. *Cut-Off theorems for the PV-model*. Preprint. ArXiv:1807.03144. Accepted with revisions.
- 2017: L. Fajstrup, T.H. Kjeldsen, A.K. Gjerløff. *Being a female mathematician in the 20<sup>th</sup> century seen through the eyes of four Danes*. To Appear in the book *Against All Odds*. Ed. N. Oswald, E.M. Kaufholz, Book series *Women in the history of Philosophy and Science*. Springer Verlag.

### Publications

- 2017: L. Fajstrup, J. Pita Costa. *On the Hierarchy of d-structures*. Order, Vol 34, Nr.1, 2017, s. 139–163.
- 2017: L. Fajstrup, A.K. Gjerløff, T.H. Kjeldsen. *Being a female mathematician in the 20<sup>th</sup> century seen through the eyes of four Danes*. *Women in Mathematics: Historical and Modern Perspectives*. Oberwolfach Reports. Vol. 2017. Iss. 1 2017.
- 2016: L. Fajstrup, E. Goubault, E. Haucourt, S. Mimram, M. Raussen. *Directed Algebraic Topology and Concurrency*. Springer, 2016, 167 pages. Book.
- 2014: L. Fajstrup. *Trace spaces of Directed tori with rectangular holes*. *Mathematical Structures in Computer Science*, Vol 24. Nr.2.
- 2012: N. Afzelius, L. Fajstrup. *BehÅ,ver rigtige drenge ikke lave lektier?*, MONA: Matematik og Naturfagsdidaktik. 2, s. 71-74.
- 2012: L. Fajstrup, E. Goubault, E. Haucourt, S. Mimram & M. Raussen. *Trace Spaces: an Efficient New Technique for State-Space Reduction*. *Proceedings of European Symposium on Programming, ESOP 2012*. Springer Lecture Notes in Comput. Sci. Volume 7211, 2012, pp 274-294.
- 2012: L. Fajstrup. *Ditopology - a short tutorial*. *Applications of Combinatorial Topology to Computer Science (Dagstuhl Seminar 12121)*. Dagstuhl Reports. Vol 2 Issue 3. Schloss Dagstuhl-Leibniz-Zentrum für Informatik.
- 2011: L. Fajstrup. *Erratum to "Discovering Spaces"*. *Homology, Homotopy and Applications* 13 (1), 403-406
- 2010: L. Fajstrup, *Classification of discoverings*. *Topology Appl.* 157, No. 15, 2010. pp. 2402–2412.