

CURRICULUM VITAE AND LIST OF PUBLICATIONS FOR  
STEEN MARKVORSEN

Updated October 2011

### Curriculum Vitae

- Born : August 30, 1954, Bækmarksbro, Jutland, Denmark.
- June 1974 : Finished Gymnasium, Math.-Phys., Holstebro.
- January 1980 : Master of Science in Engineering, DTU.
- June 1983 : Ph.D. (Lic. Techn.) from DTU.
- Feb. 1982 - May 1983 : Scientific Assistant at Department of Mathematics, DTU.
- Aug. 1983 - July 1984 : Visiting Assistant Professor at Department of Mathematics, University of Missouri-Columbia, USA. Sponsors: Danish Natural Science Research Council and the Fulbright Foundation.
- Sept. 1984 - Aug. 1985 : Gastwissenschaftler am Max Planck Institut für Mathematik, Bonn, BRD. Sponsor: Max Planck Institut für Mathematik.
- Sept. 1985 - Feb. 1989 : Assistant Professor at Department of Mathematics, DTU.
- March 1989 - March 1990 : Associate Professor at Department of Mathematics, DTU.
- April 1990 - August 1998 : Docent (Reader) at Department of Mathematics, DTU.
- From September 1998 : Professor at Department of Mathematics, DTU.
- From September 2004 to August 2005 : Affiliated (20%) with the Learning Lab DTU.

### Scholarships, grants, and fundraising

- Fulbright Scholarship Travel Grant (1983).
- Post doc stipend from the Danish Natural Science Research Council (SNF) (1983–1984).
- Fully supported by research grant and membership at Max Planck Institut für Mathematik, Bonn, BRD (1984–1985).
- P. Gorm-Petersen's Commemorative Grant (1988).
- Member of the [Mathematical Sciences Research Institute, Berkeley, USA](#), October 1993.
- Member of the group of researchers supported by the SNF-grant: *Global Analysis with Applications* (1992–2007).

- Contractor: SNF project *Combinatorial Differential Geometry* (1994–1995). Included a Post doc stipend for Dr. Petr Lisoněk (1995–1996). Coresearchers: Poul Hjorth and Carsten Thomassen (DTU Mathematics).
- Member of research group supported by DANVIS, the Danish Programme for Visiting Scientists (Co. The Danish Research Academy) with a Post Doc stipend for Dr. Robert Sinclair (1998–1999). Coresearchers: Poul Hjorth and Jens Gravesen (DTU Mathematics).
- Contractor and member of group of teachers with support from IPN, the Engineers Pedagogical Network for the "Geometry Project"(1998–1999).
- Research grant from Reinholdt W. Jorck and Wife's Foundation, December 1999.
- Co-researcher (with Ana Hurtado and grantholder Vicente Palmer) in the project *Geometric Analysis* (2004–2010), funded by [The Spanish Ministry of Education and Science](#).
- Initiator, grantholder and co-organizer (with C. Henriksen and K. Schmidt) of [Matematicum](#), the mathematical inspiratorium at DTU, funded by [The Danish Natural Science Research Council \(FNU\)](#), [The Birch&Krogboe Foundation](#), DTU's Strategic Fund, and [Skoletjenesten](#), 2007–.
- Member of E-learning project *HEROS for first year math - new ways of learning* (with grantholder H. Rootzén, DTU Informatics; K. Schmidt, DTU Mathematics; and L. Sendrup, LearningLab DTU) 2008–2010. Funded by the National IT and Telecom Agency for The Ministry of Science, Technology, and Innovation.

### Other Offices

- Member of [the European Mathematical Society](#) Committee on Raising Public Awareness of Mathematics, see [Mathematics-in-Europe website](#), from 2009.
- Member of Math Forum (secondary school issues), Ministry of Education, from 2010.
- Member of the board of [Gammel Hellerup Gymnasium](#) from 2007.
- Member of the board of [DTU Mathematics](#), 2006–2011.
- Member of the [Danish Academy of the Natural Sciences](#) from 2001.
- Member of the board of the [Technical Knowledge Center of Denmark](#), 2003–2005.
- Associate editor for the *Newsletter of the European Mathematical Society*, 1999–2005.
- Associate editor for *Aktuel Naturvidenskab*, 1999–2005.
- Member of the board of the [Danish Mathematical Society \(Dansk Matematisk Forening\)](#), 1988–1998.
- Author and figure-maker for [The Danish Encyclopedia](#) 1993–2002.

- Officially appointed [Examiner in Mathematics](#) at the Universities in Denmark from 1987.
- Lecturer at the [University Extension of the University of Copenhagen \(Folkeuniversitetet\)](#), 1985–2009.

### Research impact statistics profile

- According to ISI Web Of Knowledge, Web of Science  
<http://www.isiwebofknowledge.com/>  
Articles: 29; Sum of times cited: 179; H-index: 8.
- According to AMS MathSciNet, Math Review  
<http://www.ams.org/mathscinet/>  
Total publications: 35; Co-authors: 19; Total cites: 128; Cited by 75 authors.
- According to AMS MathSciNet, (selected) Collaboration distances  
<http://www.ams.org/mathscinet/collaborationDistance.html>  
C. F. Gauss: 6; B. Riemann: 5; A. Einstein: 4; S. S. Chern: 3; S. T. Yau: 3; M. Gromov: 3; P. D. Lax: 3; L. Carleson: 3; M. Berger: 3; K. Nomizu: 3; J. Cheeger: 3; P. Erdős: 2; H. Busemann: 2; R. M. Schoen: 2; J. Dodziuk: 2; H. Karcher: 2; J. P. Bourguignon: 2; D. Gromoll: 2;

### Ph.D. Thesis

*On the Geometry of the Scalar Jacobi Equation*, Department of Mathematics, DTU (1983), 107 pages. Advisors: Vagn Lundsgaard Hansen and Otto Moltke Leth. External examiner: Karsten Grove.

### Publications

- (1) *A Ricci Curvature Criterion for Compactness of Riemannian Manifolds*. *Archiv der Mathematik* **39** (1982) 85–91. MR 84b:53039, Zbl 0497.53046.
- (2) *A Sufficient Condition for a Compact Immersion to be Spherical*. *Mathematische Zeitschrift* **183** (1983) 407–411. MR 85d:53029, Zbl 0498.53040.

- (3) (with J. Beem, P. Ehrlich and G. Galloway) *Decomposition Theorems for Lorentzian Manifolds with Nonpositive Curvature*. Journal of Differential Geometry **22** (1985) 29–42. MR 87i:53093b, Zbl 0585.53054.
- (4) (with J. Beem, P. Ehrlich and G. Galloway) *A Toponogov Splitting Theorem for Lorentzian Manifolds*. In Global Differential Geometry and Global Analysis 1984, Proceedings, Berlin. Lecture Notes in Mathematics **1156** (1985) 1–13. MR 87i:53093a, Zbl 0567.53046.
- (5) *On the Heat Kernel Comparison Theorems for Minimal Submanifolds*. Proceedings of the American Mathematical Society **97** (1986) 479–482. MR 87i:58160, Zbl 0597.53049.
- (6) (with J. Beem and P. Ehrlich) *Timelike Isometries of Space-Times with Nonnegative Sectional Curvature*. In Proceedings of the Colloquia Math. Soc. Janos Bolyai, **46**, 1984, North Holland (1987) 153–165. MR 89e:53095, Zbl 0634.53044.
- (7) (with J. Beem and P. Ehrlich) *Timelike Isometries and Killing Fields*. Geometriae Dedicata **26** (1988) 247–258. MR 89k:53058, Zbl 0647.53045.
- (8) *A Note on Disfocality*. Journal of Mathematical Analysis and Applications **131** (1988) 106–112. MR 89d:34063, Zbl 0651.34031.
- (9) *On the Mean Exit Time From a Minimal Submanifold*. Journal of Differential Geometry **29** (1989) 1–8. MR 90a:58190, Zbl 0637.58033.
- (10) *A characteristic Eigenfunction for Minimal Hypersurfaces in Space Forms*. Mathematische Zeitschrift **202** (1989) 375–382. MR 91a:53086, Zbl 0661.53041.
- (11) *A Transplantation of Heat Kernels and Eigenfunctions via Harmonic Maps*. In Proceedings of the 6.th Int. Colloquium on Differential Geometry, Santiago de Compostela, Spain (1988). Editor: L.A. Cordero. Cursos y Congresos, **61** (1989) 171–175. MR 91g:58278, Zbl 0752.58033.
- (12) *On Hypersurfaces in Hyperquadrics*. In Proceedings of the Colloquia Math. Soc. Janos Bolyai, **56** (1989), North Holland (1992) 469–475. MR 94b:53096, Zbl 0789.53037.

- (13) (with S. McGuinness and C. Thomassen) *Transient Random Walks on Graphs and Metric Spaces with Applications to Hyperbolic Surfaces*. Proceedings of the London Mathematical Society (3) **64** (1992) 1–20. MR 93e:60142, Zbl 0772.05086.
- (14) (with M. Brøns and W. Kliem) *Nonlinear Models of a Vibrating Elasticum*. Journal of Sound and Vibrations (1) **158** (1992) 35–43.
- (15) (with Karsten Grove) *Curvature, Triameter and Beyond*. Bulletin (New Series) of the American Mathematical Society (2) **27** (1992) 261–265. MR 93b:53036, Zbl 0753.53025.
- (16) (with J. Gravesen and L. Gæde) *A Characterization of Spheres, Circles and Cardioids*. Archiv der Mathematik **60** (1993) 579–590. MR 94e:53052, Zbl 0780.53010.
- (17) (with Karsten Grove) *New Extremal Problems for the Riemannian Recognition Program via Aleksandrov Geometry*. J. American Math. Soc. **8** (1995) 1–28. MR 95j:53066, Zbl 0829.53033.
- (18) *On Curvature and Shape - A Comparison Geometric Survey*. Expositiones Mathematicae **13** (1995) 417–432. MR 96j:53002, Zbl 0881.53030.
- (19) (with C. Philipsen and W. Kliem) *Modelling the Stem Curve of a Palm in a Strong Wind*. SIAM Review **38** (1996) 483–484.
- (20) (with H. Ferguson and A. Gray) *Costa's Minimal Surface via Mathematica*. Mathematica in Education and Research **5** (1996) 5–10.
- (21) *On Curvature and Shape*. Zb. Rad. Mat. Inst. Beograd. (N.S.) **6**, 14 (1997) 55–75. MR 99f:53004, Zbl 0947.01009.
- (22) (with P. Hjorth, P. Lisoněk and C. Thomassen) *Finite Metric Spaces of Strictly Negative Type*. Linear Algebra and its Appl. **270** (1998) 255–273. MR 98k:15027, Zbl 0894.51003.
- (23) (with P. Hjorth and S. L. Kokkendorff) *Hyperbolic Spaces are of Strictly Negative Type*. Proceedings of the Amer. Math. Soc. **130** (2002) 175–181. MR 2002j:53031, Zbl 0987.32010.

- (24) (with V. Palmer) *Generalized Isoperimetric Inequalities for Extrinsic Balls in Minimal Submanifolds*, Journal für die Reine und Angewandte Mathematik **551** (2002) 101–121. MR 2003k:53072, Zbl 1016.53047.
- (25) (with V. Palmer) *The Relative Volume Growth of Minimal Submanifolds*, Archiv der Mathematik **79** (2002) 507–514. MR 2004a:53078, Zbl 1024.53042.
- (26) (with V. Palmer) *On the Isoperimetric Rigidity of Extrinsic Minimal Balls*, Differential Geometry and its Applications **18** (2003) 47–54. MR 2003k:53046, Zbl 1041.53040.
- (27) (with M. Min-Oo) *Global Riemannian Geometry: Curvature and Topology*, Advanced courses in Mathematics CRM Barcelona. Birkhäuser (2003). MR 2003862, Zbl 1048.53028.
- (28) (with V. Palmer) *Transience and Capacity of Minimal Submanifolds*, GAFA, Geometric and Functional Analysis **13** (2003) 915–933. MR 2005d:58064, Zbl 1045.53028. [DTU Orbit Link](#).
- (29) (With V. Palmer) *How to obtain Transience from Bounded Radial Mean Curvature*, Trans. Amer. Math. Soc. **357** (2005) 3459–3479. MR 2006i:58050, Zbl 1071.58028. [DTU Orbit Link](#).
- (30) (With J. Gravesen, R. Sinclair, and M. Tanaka) *The Cut Locus of a Torus of Revolution*, Asian Journal of Mathematics **9** No. 1 (2005) 103–120. MR 2006b:53042, Zbl 1080.53005.
- (31) (With V. Palmer), *Torsional Rigidity of Minimal Submanifolds*, Proc. London Math. Soc. (3) **93** (2006) 253–272. MR2235949, Zbl 1104.53056. [DTU Orbit Link](#).
- (32) (With H. Bohr and J. Ipsen), *Condensed matter physics of biomolecule systems in a differential geometric framework*, Internat. J. Modern Phys. B, Vol. 21 (2007) 2475–2492. [DTU Orbit Link](#).
- (33) *The classical version of Stokes' theorem revisited*, Internat. J. Math. Ed. Sci. Tech. **39** (issue 7) (2008) 879–888. [DTU Orbit Link](#).
- (34) *Minimal Webs in Riemannian Manifolds*. Geometriae Dedicata **133** (2008) 7–34. MR2390065, Zbl 1172.53039. [DTU Orbit Link](#).

- (35) (With Ana Hurtado and Vicente Palmer) *Torsional Rigidity of Submanifolds with Controlled Geometry*. *Mathematische Annalen* **344** (2009) 511–542. MR2501301, Zbl pre05565278. [DTU Orbit Link](#).
- (36) (With I. Holopainen and V. Palmer)  *$p$ –Transience and  $p$ –Hyperbolicity of Submanifolds*. *Revista Matemática Iberoamericana* **25** (2009) 709–738. MR2569551, Zbl 1176.53056. [DTU Orbit Link](#).
- (37) (With V. Palmer) *Extrinsic Isoperimetric Analysis on Submanifolds with Curvatures bounded from below*. *Journal of Geometric Analysis* **20** (2010) 388–421. [DTU Orbit Link](#).
- (38) (With Ana Hurtado and Vicente Palmer) *Comparison of exit moment spectra for extrinsic metric balls; Potential Analysis*; Published online, March 2011, DOI: 10.1007/s11118-011-9223-3, [DTU Orbit Link](#).
- (39) (With M. K. Misztal, J. A. Bærentzen, and F. Anton) *Cut locus construction using deformable simplicial complexes*. Eighth International Symposium on Voronoi Diagrams in Science and Engineering (ISVD), 2011.

### Preprints, in preparation

- (40) *From  $PA(X)$  to  $RPAM(X)$* , to appear (2012) as chapter in proceedings from workshop on Raising Public Awareness of Mathematics, held in Obidos, Portugal, 2010.
- (41) (With Ana Hurtado and V. Palmer), *Exit moment spectra versus Laplacian Dirichlet spectra*; In preparation.
- (42) (With G. Pacelli Bessa and J. Fabio Montenegro), *Heat kernel comparison theorems for minimal submanifolds in  $N \times \mathbb{R}^k$* ; In preparation.
- (43) (With H. C. Hansen et al.), *Modern Math Skills – from K1 to K12* (in Danish), a report to be presented before the Ministry of Education, in preparation.
- (44) *A Finsler geometric fire particle paradigm for wildfire spread*; In preparation.
- (45) *Manifolds on fire*; In preparation.

### Historical/Didactical/Elementary/

- (46) *On Gauss - A Fragmentary Essay (Danish)*. Nordisk Matematisk Tidsskrift **40** (1) (1992) 26–36. Also in French, translated by A. Douady: *Sur Gauss (essai fragmentaire)*. Quadrature **6** Octobre–Novembre (1990) 7–12. MR 93k:01038.
- (47) *Fixed Points (Danish)*. In "Matematiske Ideer; En Artikelsamling til større Skriftlige Opgaver"; Eds.: S.T. Jensen and J. Matthiasen, Matematiklærerforeningen (The Association of Gymnasium Mathematics Teachers in Denmark) (1993) 159–174.
- (48) *The Area of Spherical Polygons (Danish)*. In "Matematiske Essays"; Eds.: J. Carstensen and S. T. Jensen, Matematiklærerforeningen (The Association of Gymnasium Mathematics Teachers in Denmark) (1995) 86–91.
- (49) (with V. L. Hansen and P. Hjorth) *Mathematics between Man and Machine (Danish)*. In: "Matematikundervisning i lyset og skyggen af edb"; Ed.: G. Fosgerau et al., KvaN, (1996) 71–82.
- (50) (with G. Greene, R. Greene, H. B. Nielsen, P. Røgen, R. Sinclair, and M. Ungstrup), *SCAN-Technology: Feature recognition for automated sculpture reproduction*. In Final Report from ESGI 32 Study Group with Industry, Dept. of Math. DTU, 30 August - 4 Sep. 1998, pp. 95–108, <http://www.mat.dtu.dk/ESGI32>.  
Eds.: P. Hjorth and J. Gravesen.  
Appears also in ECMI Newsletter **25** (1999) 15–18.
- (51) *An Interview with Professor Sir Christopher Zeeman*, Newsletter of the European Mathematical Society **30** (Dec. 1998) 14–19.
- (52) (with P. Hjorth), *Experimental Mathematics – Mathematical Experiments*, in Danish, Naturens Verden Nr. **3** (1999) 33–40. Reprinted in special issue, supported by The Danish Natural Sciences Research Council, (2000).
- (53) *Aar 2000 er Matematikår* (in Danish), Aktuel Naturvidenskab Nr. **1** (1999) 57.
- (54) *A Geometric Exploration into Time and Space* (in Danish), Aktuel Naturvidenskab Nr. **3** (1999) 3–6.

- (55) (with K. E. Andersen), *A Geometric Exploration into Time and Space* (in Danish), Sciencesite Matematik, DTU, (1999)  
<http://www.sciencesite.dtu.dk/matematik/index.htm>
- (56) *An Interview with Professor Bernd Wegner*, Newsletter of the European Mathematical Society **37** (Sep. 2000) 24–26.
- (57) *Matematik handler om at forstå hvad der foregår* (in Danish) Chapter 6 in *Matematikken og Verden*, (ed. Mogens Niss), pp. 136–157, Forlaget Fremad, 2001.
- (58) (with P. Alsholm and W. Kliem) *Shaping the Future of Engineering Mathematics*, Proceedings of the SEFI Annual Conference (Eds.: Ole Vinther and Palle Sørensen), Copenhagen, September 12. - 14., 2001, p. 170.
- (59) (with K. E. Andersen), *Boomerangs* (in Danish), Department of Math. server (2001)  
<http://www.mat.dtu.dk/Boomerang/>
- (60) (with P. Sørensen and H. Rootzen), *IT and learning at DTU* (in Danish), IPN news **11** (2002) 10–11.
- (61) (with B. Branner), *Interview with Vagn Lundsgaard Hansen*, Newsletter of the European Mathematical Society **47** (2003) 15–19. Reprinted in Matilde, Newsletter of the Danish Mathematical Society, **17** (2003) 34–39.
- (62) (with M. P. Bendsøe, P. G. Hjorth, and A. Bertelsen), *Optimale Konstruktioner*, Perspektiv **3**, Fysikforlaget (2003) 1–8.
- (63) Invited commentator, *Science Cafe: What is science?*, A debate 9.th March 2003. Eye witness tale in booklet by G. Balling and E. Schuler, *The Science Café, Science, Art, and Culture*, Hovedland Publishers (2004) pp. 43–44.
- (64) *Matematikken i Krydsfeltet mellem Undervisning, Forskning, og Innovation*, In proceedings from 3:e Pedagogiska Inspirationskonferensen, Eds.: Lisbeth Tempte and Torgny Roxå, Lunds Tekniska Högskola, 31. Maj (2005) 60–61.
- (65) (With M. Bro, K. Døring, L.-P. Ellekilde, M. S. Hansen, D. Spence, M. Stolpe, and D. Sølvason) *Smart Calibration of Excavators - An ESGI54 Project from MIKROFYN*, Report from the 54.th European

Study Group with Industry, Maersk Institute for Production technology, Odense, 15.08.05–19.08.05.

- (66) *Integration i flere Variable*, Notes, Department of Mathematics; Upgraded yearly in compatibility with a Maple Integrator package. The current version in fulltext is found at the address:  
<http://www2.mat.dtu.dk/education/01005/MWS/INTEGRATOR8/>
- (67) *The direct flow parametric proof of Gauss' divergence theorem revisited*, MAT-Report 2006-15, Institut for Matematik og LLDTU, 2006.
- (68) (With J. W. Perram, P. Hjorth, J. J. Henriksen and 29 students), *Maersk Institute sets record in distance learning*, News from The Maersk Institute for Production Technology, 21.06.06,  
<http://www.mip.sdu.dk/news/gr/perram.210606.htm>
- (69) (With P. G. Hjorth) *Licence to Thrill*, One Chapter and 5 project appetizers in book: *Experimental Mathematics* (in Danish), Ed. N. M. Afzelius et al. Matematiklærerforeningen (2007).
- (70) *A Blue Lagoon Function*. A 3D print and a short paper-borne explanation. Produced upon special request from Gunnar Mohr, Dean of Studies, DTU, December 2007.
- (71) *Math Education at a Crossroads*. Presentation at ICME 11 (Eleventh International Congress on Mathematical Education) in Monterrey, Mexico, July 6.–13. 2008. <http://www.icme11.org/node/622>
- (72) (With Lars R. Knudsen and Hans Sloth), *Polyedre - Mappe og Ud-klipsark*, TRIP, 2008.
- (73) *Fire!*. Chapter in book: *Mathematical Horizons* (in Danish), (Eds.: Carsten B. Hansen, Per. C. Hansen, Vagn L. Hansen, and Mette M. Andersen), pp. 50–61, DTU (2009). Presentation (in Danish): [DTU Orbit reference to presentation](#), download \*.pdf full text book from: [Matematiske Horisonter](#)
- (74) *Geometric Operations in Plane and Space*, Notes (in Danish), Department of Mathematics; Upgraded yearly in compatibility with the course of the same name: 01999 Geometric Operations in Plane and Space. [2010 version online](#).
- (75) (With M. May et al.) *Constraints on reusability of learning objects: Didactic aspects of modular e-learning in engineering education*.

CSEU 2010 - 2nd International Conference on Computer Supported Education, Proceedings 2010, Vol. 2, pp. 325–332.

(76) (With Lotte B. Jensen and Henrik Almegaard), *Mutual Workshops enhancing Curriculum Integration*, Proceedings of the 7. International CDIO Conference – International CDIO Conference, 2011.

(77) (With Karsten Schmidt et al.) *e-Notes for Mathematics 1 at DTU*, <http://01005.mat.dtu.dk/2011/>

## SUPERVISION AND TEACHING

### Supervised and Co-supervised Ph.D. theses

- ★ Jens Chr. Larsen, *Dynamical Systems and Semi-Riemannian Geometry*, Febr. 1991. (With V. Lundsgaard Hansen.)
- ★ Annette Simonsen, *Inverse Spectral Geometry*, July 1993.
- ★ Peter Røgen, *The Topology and Geometry of Knots and Links*, March 1999. (With V. Lundsgaard Hansen.)
- ★ Simon Lyngby Kokkendorff, *Geometry and Combinatorics*, January 2003. (With P. G. Hjorth.)

### Supervised and Co-supervised Master's theses

- ★ Jens Chr. Larsen, *Gradient Fields on a Semi-Riemannian Manifold (Danish)*, July 1988. (With V. Lundsgaard Hansen.)
- ★ Jonas Berg, *Some Partial Differential Equations from Geometry (Danish)*, Aug. 1988. (With V. Lundsgaard Hansen.)
- ★ Michael Mikkelsen, *On the Geometry of Static Space Times (Danish)*, Aug. 1989.
- ★ Ole Smith, *Selected Mathematical Methods from Analytical Mechanics (Danish)*, Jan. 1990.
- ★ Annette Simonsen, *On the Geometric Properties of the Laplace Operator (Danish)*, Aug. 1990.
- ★ Thomas Randrup and Peter Røgen, *How to Twist a Knot*, Jan. 1995. (With J. Gravesen.)
- ★ Johannes Rebel, *Tower of Babylon*, Aug. 1995. (With J. Gravesen.)
- ★ Jakob Hall, *Twisted 2-D Elastica*, Febr. 1998. (With J. Gravesen.)
- ★ Erik Flensburg, *Simulated Dynamics of Semi-regular Polyhedra*, June 1998. (With J. Gravesen.)

- ★ Peter Nilsson, *A Geometric Analysis of the Double Pendulum Dynamics*, Febr. 1999.
- ★ Andrew C. Mumm, *The Geometry of Kerr Spacetimes*, Dec. 2003.
- ★ Helle Johansson, *Minimal surfaces in proteins*, June 2007. (With T. Blicher and P. Røgen.)
- ★ Sigmund Vestergaard, *Geometro-dynamical Growth Models of Forest fire Fronts*, March 2009.

## DISSEMINATION

### Lexicographical Work

Selected articles for The Danish Encyclopedia:

- Afstand (Distance)*. Vol **1** (1994) p. 131.
- Areal (Area)*. Vol **1** (1994) p. 566.
- Bue (Arc)*. Vol **3** (1995) p. 453.
- Buelængde (Arc Length)*. Vol **3** (1995) p. 454.
- Chern, Shiing-Shen*. Vol **4** (1996) p. 150.
- Differentialgeometri*. Vol **5** (1996) pp. 129–130.
- Fladeareal (Surface Area)*. Vol **6** (1996) p. 404.
- Flisebelægning (Tilings)*. Vol **6** (1996) p. 430.
- Integralgeometri (Integral Geometry)*. Vol **9** (1997) p. 413.
- Katenoide (Catenoid)*. Vol **10** (1998) p. 387.
- Kaustisk Flade (Focal Surface)*. Vol **10** (1998) p. 399.
- Normalsnit (Normal Section)*. Vol **14** (1999) p. 297.
- Oskulation (Osculation)*. Vol **14** (1999) p. 563.
- Plateau's problem*. Vol **15** (1999) p. 294.
- Pol (Pole)*. Vol **15** (1999) p. 322.
- Polar figur (Polar figure)*. Vol **15** (1999) p. 323.
- Projektion (Projection)*. Vol **15** (1999) p. 478.
- Pseudosfære (Pseudosphere)*. Vol **15** (1999) p. 519.
- Ricci-Curbastro, Gregorio*. Vol **16** (2000) p. 185.
- Riemannsk Geometri (Riem. Geometry)*. Vol **16** (2000) p. 195.
- Røring (Contact of order  $d$ )*. Vol **16** (2000) p. 464.
- Saddelpunkt (Saddle point)*. Vol **16** (2000) p. 484.
- Sfærisk ekscess (Sph. excess)*. Vol **17** (2000) p. 135.
- Sfærisk geometri (Sph. geometry)*. Vol **17** (2000) p. 135.
- Sfærisk trigonometri (Sph. trig.)*. Vol **17** (2000) p. 135.
- Superellipse (Super ellipse)*. Vol **18** (2000) p. 288.
- Trestangskurve (Three bar mechanism curve)*. Vol **19** (2001) p. 241.
- Variationsregning (Variational calculus)*. Vol **19** (2001) p. 30–31.
- Kepler's formodning om kuglestablinger (Kepler's sphere packing conjecture)*. Vol **21** (2002) p.366.

### Outreaches

- Organizer (with Christian Thune Jacobsen, DTU Adgangskursus) of two-day *Maple Workshop* for 42 teachers from Danish highschools, at DTU Mathematics, August 24.-25. 2009. [Homepage](#)
- Invited speaker at Summer School on *Manifold Learning and Image Analysis*, Hven, Sweden, August 17 - 21, 2009. Presentation: *The Meaning of Curvature - A distance Geometric Approach*. [DTU Orbit reference](#)
- Organizer (with [David Brander](#), DTU Mathematics) of *Workshop on Discrete Differential Geometry* at DTU Mathematics, July 16. 2009. [Homepage](#)
- Organizer (with Christian Thune Jacobsen, Gammel Hellerup Gymnasium) of 3-step *Maple Workshop* for teachers from Gammel Hellerup Gymnasium and Virum Gymnasium, fall 2008.
- Invited talk at CDIO Regional Nordic meeting, October 21, 2008 at DTU: *Active math learning*.
- Participated in workshop: *Distance Geometry* at University of Salzburg, Austria, May 5 - 8, 2008. Presentation: *Roughly isometric minimal immersions into Riemannian manifolds*.
- Organizer of workshop: *First Year Mathematics at the Technical Universities, KTH, LTH, DTU*. Held at DTU Mathematics, April 21 - 22, 2008.
- Passed (with diploma) a compulsory two day in-service Epoxy Course, TEC Hvidovre, September 18 - 19, 2008.
- *DMF, Danish Mathematical Society Summer Camp at Aalborg University, August 13.-15. 2008* Presentations: *How to keep warm at a camp fire* and *Boomerang! Geometric Form and Function go into Action*.
- *Mini Science Camp, DTU*, December 16, 2007. Presentation: *Geometry: Form and Function go into Action*.
- *Matematicum - The Mathematical Inspiratorium at DTU*. Initiated July 2007. (With C. Henriksen and K. Schmidt.) Funded by the Danish Research Council, Birch & Krogboe Fund, DTU's Strategic Fund, Skoletjenesten, Danske Bank, and the Corrit Fund.
- *3D Printing and 3D Scanning - Theory and Practice*. (With J. Gravesen and P.-E. Madsen.) Funded by DTU's Strategic Fund, 2007.
- *Workshop on Geometry, Dynamics and Complex Analysis*, Workshop 24th. - 25th. November 2006. (Organizer together with J. Gravesen.)
- *Geometry and Global Analysis*, Workshop 3rd. - 4th. November 2003. (Organizer together with J. Gravesen.)
- *DMF Preprint Server*, National preprint server for mathematics. (Member of the steering committee.) Inputs to MPRESS. Delivered August 2004 to sponsor: DEF, Denmark's Electronic Research Library.
- *DMF Journal Database*, National database for mathematics journals. (Member of the steering committee, project coordinator with

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  - *LIMES*, Large Infrastructure in Mathematics (EU-project 2000-2004).
  - *Science Site*, An explorative Story concerning Geometry, Space and Time (1999). (Story teller.)
  - *DNL*, Danish Encyclopedia. (Author and figure maker.)
  - *AN*, Aktuel Naturvidenskab. (Associate editor 1999–2005)
  - *EMSnews*, Newsletter of the European Mathematical Society. (Associate editor 1999–2005.)
  - *Ny Viden*, (New Knowledge) Mathematics lectures presented to Gymnasium students.

### Interviews related to the dissemination of Mathematics

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**Exhibitions related activities**

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- *On Boy's Surface*. Exposition on Boy's surface used by M. Genevey at the exhibition "Natur og Konstruktion", Helleruplund, Feb. 14. - March 4. 2000.
- *Boomerang workshop*. Exploration booth at the opening of the DNF National Science Festival 2000 at Ingeniørernes Hus, Copenhagen, 22.09.00.
- *The return of the Boomerang: A Geometric Challenge*. Workshop booth at the 10th International Congress on Mathematical Education. DTU, Copenhagen, Denmark; 4–11 July 2004. Also presented at the Lyngby Shopping Center, 03.07.04.
- *Matematicum*, <http://www.matematicum.dtu.dk/>, since 2007.