

List of papers

Björn Gustafsson

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1 Publications

1.1 Papers in journals and proceedings

1. B. Gustafsson: *Quadrature identities and the Schottky double*, Acta Applicandae Mathematicae **1** (1983), 209–240.
2. B. Gustafsson: *On a differential equation arising in a Hele Shaw flow moving boundary problem*, Ark. Mat. **22** (1984), 251–268.
3. B. Gustafsson: *Applications of variational inequalities to a moving boundary problem for Hele Shaw flows*, SIAM J. Math. Anal. **16** (1985), 279–300.
4. B. Gustafsson: *Existence of weak backward solutions to a generalized Hele Shaw flow moving boundary problem*, Nonlinear Anal. **9** (1985), 203–215.
5. B. Gustafsson: *A simple proof of the regularity theorem for the variational inequality of the obstacle problem*, Nonlinear Anal. **10** (1986), 1487–1490.
6. A. Friedman, B. Gustafsson: *Identification of the conductivity coefficient in an elliptic equation*, SIAM J. Anal. **18** (1987), 777–787.
7. B. Gustafsson, J. Mossino: *Quelques inégalités isopérimétriques pour le problème de Stefan*, C. R. Acad. Sci. Paris, Sér. I Math. **305** (1987), 669–672.
8. B. Gustafsson: *An ill-posed moving boundary problem for doubly-connected domains*, Ark. Mat. **25** (1987), 331–353.
9. B. Gustafsson, J. Mossino: *Some isoperimetric inequalities in electrochemistry and Hele Shaw flows*, IMA J. Appl. Math. **39** (1987), 33–49.
10. B. Gustafsson: *Applications of half-order differentials on Riemann surfaces to quadrature identities for arc-length*, J. Analyse Math. **49** (1987), 54–89.
11. B. Gustafsson: *Singular and special points on quadrature domains from an algebraic geometric point of view*, J. Analyse Math **51** (1988), 91–117.
12. B. Gustafsson, J. Peetre: *Notes on projective structures on complex manifolds*, Nagoya Math. J. **116** (1989), 63–88.
13. B. Gustafsson, J. Mossino: *Isoperimetric inequalities for the Stefan problem*, SIAM J. Math. Anal. **20** (1989), 1095–1108.

14. B. Gustafsson, J. Peetre: *Möbius invariant (differential) operators on Riemann surfaces*, in Function Spaces, Operators and Non-Linear Analysis (ed. L. Päivärinta), pp. 14–75, Longman 1989.
15. B. Gustafsson, J. Mossino, C. Picard: *Homogenization of a conductivity coefficient in an annulus(I)*, C. R. Acad. Sci. Paris, Sér. I Math. **309** (1989), 239–244.
16. B. Gustafsson, J. Peetre: *Hankel forms on multiply connected plane domains. Part two. The case of higher connectivity*, Complex Variables **13** (1990), 239–250.
17. B. Gustafsson: *A note on an identification problem in potential theory*, in Free Boundary Problems: Theory and Applications Vol. II (eds. K. H. Hoffman and J. Sprekels), pp. 459–462, Longman 1990.
18. B. Gustafsson, J. Mossino: *Some isoperimetric inequalities in electrochemistry and Hele Shaw flows*, in Free Boundary Problems: Theory and Applications Vol. II (eds. K. H. Hoffman and J. Sprekels), pp. 525–531, Longman 1990.
19. B. Gustafsson: *On the convexity of a solution of Liouville's equation*, Duke Math. J. **60** (1990), 303–311.
20. B. Gustafsson: *On quadrature domains and an inverse problem in potential theory*, J. Analyse Math. **55** (1990), 172–216.
21. B. Gustafsson, J. Mossino, C. Picard: *Homogenization of foliated annuli*, Ann. Mat. Pura Appl. (4) **162** (1992), 87–104.
22. B. Gustafsson, M. Sakai: *An approximation theorem for integrable harmonic vector fields*, Math. Scand. **70** (1992), 78–90.
23. B. Gustafsson, J. Mossino, C. Picard: *Limit behaviour of some stratified structures with high conductivity*, in Progress in Partial Differential Equations: Calculus of Variations, Applications (eds. C. Bandle, J. Bemelmans, M. Chipot, M. Grüter and J. Saint Jean Paulin), pp. 187–199, Longman 1992.
24. B. Gustafsson, M. Sakai: *Some geometric properties of solutions of a Hele Shaw flow moving boundary problem*, in Free boundary problems in fluid flow with applications (eds. J. M. Chadam and H. Rasmussen), pp. 53–57, Longman 1993.
25. B. Gustafsson, J. Mossino: *Isoperimetric inequalities for the Stefan problem*, in Free boundary problems involving solids (eds. J. M. Chadam and H. Rasmussen), pp. 130–134, Longman 1993.

26. B. Gustafsson, J. Mossino, C. Picard: *Stratified material allowing asymptotically prescribed equipotentials*, Ark. Mat. **32** (1994), 293–307.
27. B. Gustafsson, D. Khavinson: *On approximation by harmonic vector fields*, Houston J. Math. **20** (1994), 75–92.
28. B. Gustafsson, J. Mossino, C. Picard: *H-convergence for stratified structures with high conductivity*, Adv. Math. Sci. Appl. **4** (1994), 265–284.
29. B. Gustafsson, M. Sakai: *Properties of some balayage operators with applications to quadrature domains and moving boundary problems*, Nonlinear Anal. **22** (1994), 1221–1245.
30. B. Gustafsson, D. Khavinson: *On annihilators of harmonic vector fields*, Zap. Nauchn. Sem. S.-Petersburg. Otdel. Mat. Inst. Steklov. (POM) **232** (1996), Issled. po Linein. Oper. i Teor. Funktsii. **24**, 90–108, 215. Reprinted in J. Math. Sci. (New York) **92** (1998), no. 1, 3600–3612.
31. B. Gustafsson, H. Shahgholian: *Existence and geometric properties of solutions of a free boundary problem in potential theory*, J. Reine Angew. Math. **473** (1996), 137–179.
32. B. Gustafsson: *A distortion theorem for quadrature domains for harmonic functions*, J. Math. Anal. Appl. **202** (1996), 169–182.
33. B. Gustafsson, B. Heron, J. Mossino: *Γ -convergence relaxée et application à des problèmes non coercifs*, C.R. Acad. Sci. Paris, Sér. I Math **323** (1996), 7–12.
34. B. Gustafsson, M. Sakai, H.S. Shapiro: *On domains in which harmonic functions satisfy generalized mean-value properties*, Potential Anal. **7** (1997), 467–484.
35. B. Gustafsson: *Direct and inverse balayage — some new developments in classical potential theory*, in Proceedings of the Second World Congress of Nonlinear Analysts, Nonlinear Anal. **30:5** (1997), 2557–2565.
36. B. Gustafsson: *On mother bodies of convex polyhedra*, SIAM J. Math. Anal. **29:5** (1998), 1106–1117.
37. B. Gustafsson, M. Putinar: *An exponential transform and regularity of free boundaries in two dimensions*, Ann. Scuola Norm. Sup. Pisa Cl. Sci. **98** (1998), 507–543.

38. B. Gustafsson, M. Sakai: *On potential theoretic skeletons of polyhedra*, Geom. Dedicata **76** (1999), 1–30.
39. B. Gustafsson: *An exponential transform and regularity of free boundaries in two dimensions*, in Free boundary problems: theory and applications (eds. I. Athanasopoulos, G. Makrakis, J.F. Rodrigues), pp. 139–146, Chapman & Hall/CRC 1999.
40. B. Gustafsson, M. Putinar: *Linear analysis of quadrature domains II*, Israel J. Math. **119** (2000), 187–216.
41. B. Gustafsson, M. Putinar: *On exact quadrature formulas for harmonic functions on polyhedra*, Proc. Amer. Math. Soc. **128** (2000), 1427–1432.
42. B. Gustafsson, B. Heron, J. Mossino: *Γ -convergence of stratified media with measure-valued limits*, Asymptotic Analysis **22** (2000), 261–302.
43. B. Gustafsson, C. He, P. Milanfar, M. Putinar: *Reconstructing planar domains from their moments*, Inverse Problems **16** (2000), 1053–1070.
44. A. Gaudiello, B. Gustafsson, C. Lefter, J. Mossino: *Coupled and uncoupled limits for a N -dimensional multidomain Neumann problem*, C. R. Acad. Sci. Paris, **330** (2000), 985–990.
45. G. Golub, B. Gustafsson, P. Milanfar, P. Putinar, J. Varah: *Shape reconstruction from moments: theory, algorithms, and applications*, SPIE Proceedings vol. **4116** (2000), Advanced Signal Processing, Algorithms, Architecture, and Implementations X (Franklin T. Luk, ed.) pp. 406–416.
46. B. Gustafsson, M. Putinar: *Analytic continuation of Cauchy and exponential transforms*, Analytic extension formulas and their applications (Fukuoka, 1999/Kyoto, 2000), 47–57, Int. Soc. Anal. Appl. Comput., 9, Kluwer Acad. Publ. Dordrecht, 2001.
47. A. Gaudiello, B. Gustafsson, C. Lefter, J. Mossino: *Asymptotic analysis of a class of minimization problems in a thin multidomain*, Calculus of Variations and Partial differential Equations, **15** (2002), 181–201.
48. A. Gaudiello, B. Gustafsson, C. Lefter, J. Mossino: *Asymptotic analysis for monotone quasilinear problems in a thin multidomain*, Differential and Integral Equations **15** (2002), 623–640.
49. B. Gustafsson, J. Mossino: *Explicit limits for nonperiodic homogenization and reduction of dimension*, C. R. Math. Acad. Sci. Paris **334** (2002), 977–982.

50. B. Gustafsson, M. Putinar, H. S. Shapiro: *Restriction operators and doubly orthogonal systems of analytic functions*, J. Funct. Anal. **199** (2003), 332–378.
51. B. Gustafsson, J. Mossino: *Nonperiodic explicit homogenization and reduction of dimension: the linear case*, IMA J. Appl. Math. **68** (2003), 269–298.
52. B. Gustafsson, M. Sakai: *Sharp estimates of the curvature of some free boundaries in two dimensions*, Ann. Acad. Sci. Fenn. Math. **28** (2003), 123–142.
53. B. Gustafsson, M. Putinar: *The exponential transform: a renormalized Riesz potential at critical exponent*, Indiana Univ. Math. J. **52** (2003), 527–568.
54. A. Gaudiello, B. Gustafsson, C. Lefter, J. Mossino: *Asymptotic analysis for monotone quasilinear problems in thin multidomains*, Homogenization, 2001 (Naples), 245–249, GAKUTO Internat. Ser. Math. Sci. Appl., 18, Gakkōtoshō, Tokyo, 2003.
55. B. Gustafsson, D. Prokhorov, A. Vasiliev: *Infinite life-time for starlike dynamics in Hele-Shaw cells*, Proc. Am. Math. Soc., **132** (2004), 2661–2669.
56. B. Gustafsson, M. Sakai: *On the curvature of the free boundary for the obstacle problem in two dimensions*, Monatshefte für Mathematik, **142** (2004), 1–5.
57. B. Gustafsson: *Lectures on Balayage*, p. 17–63 in Clifford Algebras and Potential Theory, proceedings of the summer school held in Mekrijärvi, June 24– 28, 2002. University of Joensuu Department of Mathematics, Report series no. 7, ed., Sirkka-Liisa Eriksson
58. B. Gustafsson, M. Putinar: *Linear analysis of quadrature domains IV*, pp. 173-194 in Quadrature Domains and Applications (eds. P. Ebenfelt, B. Gustafsson, D. Khavinson, M. Putinar), Birkhäuser, 2005.
59. B. Gustafsson, H. S. Shapiro: *What is a quadrature domain?*, pp.1-25 in Quadrature Domains and Applications (eds. P. Ebenfelt, B. Gustafsson, D. Khavinson, M. Putinar), Birkhäuser, 2005.
60. B. Gustafsson, A. Vasil’ev: *Nonbranching of weak and starshaped strong solutions for Hele-Shaw dynamics*, Arch. Math. **84** (2005), 551-558.
61. B. Gustafsson, J. Mossino: *Compensated compactness for homogenization and reduction of dimension: the case of elastic laminates*, Asymptotic Analysis, **47** (2006), 139–169.

62. B. Gustafsson, M. Putinar: *Analytic continuation of the exponential transform from convex cavities*, J. Math. Anal. Appl. **328** (2007), 995–1006.
63. B. Gustafsson, J. Mossino: *A criterion for H -convergence in elasticity*, Asymptotic Analysis **51** (2007), 247–269.
64. B. Gustafsson, M. Putinar: *Selected topics on quadrature domains*, Physica D **235** (2007), 247–269.
65. B. Gustafsson, M. Putinar, E.B. Saff, N. Stylianopoulos: *Les pôlynomes orthogonaux de Bergman sur archipel*, C.R. Math. Acad. Sci. Paris, **346** (2008), no.9-10, 499–502.
66. B. Gustafsson, V. Tkachev: *The resultant on compact Riemann surfaces*, Comm. Math. Phys., **286** (2009), 313–358.
67. B. Gustafsson, V. Tkachev: *On the Jacobian of the harmonic moment map*, Complex Analysis and Operator Theory, **3** (2009), 399–417.
68. B. Gustafsson, M. Putinar, E.B. Saff, N. Stylianopoulos: *Bergman polynomials on an archipelago: Estimates, zeros and shape reconstruction*, Adv. Math. **222** (2009), 1405–1460.
69. S. Bell, B. Gustafsson, Z. Sylvan: *Szegö coordinates, quadrature domains, an double quadrature domains*, Computational Methods and Function Theory **11** (2011), 25–44.
70. B. Gustafsson, V. Tkachev: *On the exponential transform of lemniscates*, p. 239–257 in Notions of Positivity and the Geometry of Polynomials, Trends in Mathematics, (eds. P. Bränden, M. Passare, M. Putinar).
71. B. Gustafsson, V. Tkachev: *On the exponential transform of multi-sheeted algebraic domains*, Computational Methods and Function Theory **11** (2011), 591–615.
72. B. Gustafsson, A. Sebbar, *Critical points of Green’s function and geometric function theory and geometric function theory*, Indiana Univ. Math. J. **61** (2012), 939–1017.
73. B. Gustafsson, M. Sakai: *On the curvature of some free boundaries in higher dimensions*, Anal. Math. Phys. **2** (2012), 247–275.
74. B. Gustafsson, Yu-Lin Lin: *On the dynamics of roots and poles for solutions of the Polubarinova-Galin equation*, Ann. Acad. Sci. Fenn. Math. **38** (2013), 259–286.

75. B. Gustafsson, *Exponential transforms, resultants and moments*, pp.287-323 in Harmonic and Complex Analysis and its Applications, Trends in Mathematics (ed. A. Vasil'ev), Springer, 2014.
76. B. Gustafsson, J. Roos: *Partial balayage on Riemannian manifolds*, J. Math. Pures Appl., **118** (2018), 82–127.
77. B. Gustafsson, M. Putinar: *Line bundles defined by the Schwarz function*, Anal. Math. Phys. **8** (2018), 171–183.
78. B. Gustafsson: *Laplacian growth on a branched Riemann surface*, p. 145–161 in Analysis on Shapes of Solutions to Partial Differential Equations, RIMS, Kokyuroku No. 2082, 2018.
79. B. Gustafsson: *The string equation for polynomials*, Anal. Math. Phys. **8**(2018), 637–653.
80. B. Gustafsson: *The string equation for some rational functions*, p. 213–235 in Analysis as a Life, Trends in Mathematics, Springer Nature, 2019.
81. B. Gustafsson, M. Putinar: *A field theoretic operator model and Cowen-Douglas class*, Banach J. Math. Anal. **13** (2019), 338–358.
82. B. Gustafsson: *Vortex motion and geometric function theory: the role of connections*, Philosophical Transactions of the Royal Society A **377** (2019), DOI 10.1098/rsta.2018.0341.
83. B. Gustafsson, M. Putinar: *Finite term relations for the exponential orthogonal polynomials*, Mathematical Modelling of Natural Phenomena, EDP Sciences, (2020), DOI 10.105/mmnp/2019025.
84. S. Bell, B. Gustafsson: *Ruminations on Hejhal's theorem about the Bergman and Szegő kernel*, Anal. Math. Phys. **12**(2022), DOI 10.1007/s13324-021-00632-w
85. B. Gustafsson, A. Sebbar: *Hadamard's variational formula in terms of sess and strain tensors*, Anal. Math. Phys. **12**(2022), DOI 10.1007/s13324-021-00632-y
86. B. Gustafsson: *Harold S. Shapiro at KTH - some personal memories*, Anal. Math. Phys. **12**(2022), DOI 10.1007/s13324-022-00650-4
87. B. Gustafsson: *Vortex pairs and dipoles on closed surfaces*, J. Nonlinear Sci. **32**(2022) DOI 10.1007/s00332-022-09822-9

1.2 Books

1. B. Gustafsson, A. Vasil'ev: *Conformal and Potential Analysis in Hele-Shaw-Cells* (231 pp.), Advances in Mathematical Fluid Mechanics, ISBN 3-7643-7703-8, Birkhäuser Verlag, 2006.
2. B. Gustafsson, R. Teodorescu, A. Vasil'ev: *Classical and Stochastic Laplacian Growth*, (315 pp.), Advances in Mathematical Fluid Mechanics, ISBN 978-3-319-08286-8, Birkhäuser Verlag, 2014.
3. B. Gustafsson, M. Putinar: *Hyponormal Quantization of Planar Domains*, Lecture Notes in Mathematics 2199, ISBN 978-3-319-65809-4, Springer-Verlag, 2017.
4. B. Gustafsson, Yu-Lin Lin: *Laplacian growth on branched Riemann surfaces*, Lecture Notes in Mathematics 2287, ISBN 978-3-030-69862-1, Springer-Verlag, 2021.

1.3 Proceedings (editorial)

1. P. Ebenfelt, B. Gustafsson, D. Khavinson, M. Putinar (editors): *Quadrature Domains and Applications – a Harold S. Shapiro Anniversary Volume*, Operator Theory: Advances and Applications, Vol 156, ISBN 3-7643-7145-5, Birkhäuser Verlag, 2005.
2. B. Gustafsson, A. Vasil'ev (editors) *Analysis and Mathematical Physics*, Trends in Mathematics, ISBN 978-3-7643-9905-4, Birkhäuser Verlag, 2009.

1.4 Unpublished papers

Below TRITA-MAT refers to the research bulletin series of the mathematical department at KTH.

1. B. Gustafsson: *The Runge approximation theorem on compact Riemann surfaces* (25 pp), TRITA-MAT-1977-2.
2. B. Gustafsson: *On the motion of a vortex in two-dimensional flow of an ideal fluid in simply and multiply connected domains* (109 pp), TRITA-MAT-1979-7.
3. B. Gustafsson: *Topics in geometric function theory and related questions of hydrodynamics* (doctoral thesis; a summary of TRITA-MAT-1979-7 and the first versions of published papers no. 1 and 3) (14 pp.), TRITA-MAT-1981-22.
4. B. Gustafsson: *Variational inequality formulation of a moving boundary problem in rock mechanics* (24 pp), TRITA-MAT-1984-8.

5. B. Gustafsson: *On quadrature domains, graviequivalence and balayage*, talk given at International Symposium on Inverse Problems for Potential Fields and Applications to Geophysics, Sofia, October 1990 (11 pp).
6. M. Flucher, B. Gustafsson: *Vortex motion in two-dimensional hydrodynamics* (24 pp), TRITA-MAT-1997-MA-02. Major parts of the contents are incorporated as Ch.15 in M. Flucher: *Variational Problems with Concentration*, Birkhäuser, 1999.
7. B. Gustafsson, J. Mossino: *A note on H -convergence* (8 pp.), arXiv:math.AP/0608286 (2006).
8. B. Gustafsson, A. Sebbar: *Hadamard's variational formula and the energy-momentum tensor* (11 pp.), arXiv:2006.10360v1 [math-ph] (2020).

1.5 Other publications

1. *Inverkan av hastighetsbegränsning på trafiksäkerheten vid gles trafik – teoretisk modell med numeriska exempel* (41 pp.), with Göran Tengstrand. Master thesis in Mathematical statistics, KTH, 1972, TRITA-MAT-1972-29. Supervisor: Torbjörn Thedéen.
2. *Exempelsamling i Funktionalanalys (med lösningar)*, KTH, juli 1977.
3. Two contributions, *Något om algebraiska kurvor* och *Något om metriker*, p. 85–93 in "Välj specialarbete i matematik" edited by D. Laksov, Institut Mittag-Leffler, 1989.