

Publications by GESTUR ÓLAFSSON

Books and Monographs

1. (With J. Hilgert) Causal Symmetric Spaces, Geometry and Harmonic Analysis. Perspectives in Mathematics **18**, Academic Press, 1996

Refereed Articles and refereed Chapters in Books:

1. (with M. Aristidou and M. Davidson) Laguerre functions on symmetric cones and recursion relations in the real case. *J. Computational and Applied Mathematics.*, **199** (2007), 95–112.
2. (with E. Ournycheva, and B. Rubin) Higher-ranked wavelet transforms, ridgelets transforms, and Radon Transform on the space of matrices. *Applied and Computational Harmonic Analysis* **21** (2006) 182–203.
3. (with M. Davidson and M. Aristidou) Differential Recursion Relations for Laguerre Functions on Symmetric Cones. *Bull. Sci. math.* **130** (2006), 346–263.
4. (with R. Fabec and A. Sengupta) Fock spaces corresponding to positive definite linear transformations. *Math. Scand* **98** (2006) 262–282.
5. (with S. Gindikin and B. Krötz) Horospherical model for the holomorphic discrete series and the horospherical Cauchy transform. *Compositio Mathematica* **142** (2006) 983–1008.
6. (with A. Pasquale) Support properties and Holmgren’s uniqueness theorem for differential operators with hyperplane singularities. *J. Funct. Anal.* **239** (2006), 21–43.
7. (with M. Dobrescu) Wavelets without groups. *Contemp. Math.* **405** (2006), 27–40.
8. (with T. Branson and A. Pasquale) The Paley-Wiener Theorem and the local Huygens’ principle for compact symmetric spaces. *Indagationes* **16** (2005), 393–428. Special volume of *Indagationes* in honor of G. van Dijk.
9. (with T. Branson and A. Pasquale) The Paley-Wiener Theorem for the Jacobi Transform and the Local Huygens’ Principle for Root Systems with Even Multiplicities. *Indagationes* **16** (2005), 429–442. Special volume of *Indagationes* in honor of G. van Dijk.
10. Continuous action of Lie groups on \mathbb{R}^n and frames. *International Journal of Wavelets, Multiresolution and Information Processing* **3** No. 2 (2005), 211–235
11. (with B. Krötz and R. Stanton) The image of the heat kernel transform on Riemannian symmetric spaces of the noncompact type. *International Mathematics Research Notices* **22** (2005), 1307–1329
12. (with S. Gindikin and B. Krötz) Holomorphic H -spherical distribution vectors in principal series representations. *Inventiones Mathematicae* **158** (2004), 643–682
13. (with S. Gindikin and B. Krötz) Erratum: Holomorphic H -spherical distribution vectors in principal series representations. *Inventiones Mathematicae* **158** (2004), 683–684

14. (with A. Pasquale) A Paley-Wiener Theorem for the Θ -spherical Transform: The Even Multiplicity case. *Journal de mathématiques pures et appliquées* **83** (2004), 811–954
15. (with D. Speegle) Wavelets, wavelet sets, and linear actions on \mathbb{R}^n , *Contemporary Mathematics (AMS)* **345**, *Wavelets, Frames and Operator Theory*, Eds: C. Heil, P. Jorgensen, D. Larson, 2004, 253–281
16. (with A. Pasquale) Paley-Wiener theorems for the Θ -spherical transform: An overview. *Acta Applicandae Mathematicae* **81** (2004), 275–309
17. (with M. Davidson) The Generalized Segal-Bargmann transform and Special Functions *Acta Applicandae Mathematicae*, **81** (2004), 29–50
18. (with B. Krötz) The c -function for non-compactly causal symmetric spaces and its relations to harmonic analysis and representation theory. Ed. S.G. Gindikin, Lie groups and symmetric spaces, In memory of F.I. Karpelevich. *AMS Translations* **210**, 171–194 (2003)
19. (with Mark Davidson) Differential recursion relations for Laguerre functions on Hermitian matrices. *Integral Transforms and Special Functions* **14**, 469–484 (2003)
20. (with M. Davidson and G. Zhang) Laplace and Segal-Bargmann transforms on Hermitian symmetric spaces and orthogonal polynomials. *J. Funct. Anal.* **204** (2003), 157–195
21. (with N. B. Andersen and H. Schlichtkrull) On the inversion of the Laplace and Abel Transforms for causal symmetric spaces. *Forum Math.* **15** (2003), 679–699
22. (with S. Gindikin and B. Krötz) Hardy spaces for non-compactly causal symmetric spaces and the most continuous spectrum. *Math. Ann.* **327** (2003), 25–66
23. (with R. Fabec) The continuous Wavelet transform and symmetric spaces. *Acta Applicandae Mathematicae* **77**(1) (2003), 41–69
24. (with B. Krötz) The c -function for non-compactly causal symmetric spaces. *Invent. Math.* **149** (2002) 3, 647–659
25. (with M. Davidson and G. Zhang) Laguerre polynomials, restriction principle, and holomorphic representations of $SL(2, \mathbb{R})$. *Acta Applicandae Mathematicae* **71** (3), 261–277 (2002)
26. (with A. Pasquale) Regularity properties of generalized Harish-Chandra expansions. In: A. Strasburger et al. (eds.), *Geometry and analysis on finite- and infinite-dimensional Lie groups*, Banach Center Publications 55 (2002), 335–348. Banach Center Publications, 2002
27. (with F. Betten) Causal Compactification and Hardy Spaces for Spaces of Hermitian Type. *Pacific J. Math.* **200** (2001), 273–312
28. (with B. Krötz and K-H. Neeb) Spherical Functions on Mixed Symmetric Spaces. *Representation Theory*, **5** (2001), 43–92.
29. (with A. Pasquale) On the meromorphic extension of the spherical functions on noncompactly causal symmetric spaces. *J. Funct. Analysis* **181** (2001), 346–401
30. (with N. Andersen) A Paley-Wiener Theorem for the Spherical Laplace Transform on Causal Symmetric Spaces of Rank One. *Proceedings of the AMS.* **129** (2001), 173–179

31. Analytic Continuation in Representation Theory and Harmonic Analysis. In: Global Analysis and Harmonic Analysis, ed. J. P. Bourguignon, T. Branson, and O. Hijazi. *Seminars et Congr*, vol 4, (2000), 201–233. Pub.: The French Math. Soc.
32. (with A. Neumann) Minimal and Maximal Semigroups Related to Causal Symmetric Spaces. *Semigroup Forum* **61** (2000) 57–85
33. (with P. Jorgensen) Unitary representations and Osterwalder-Schrader Duality. Ed. R. S. Doran, V. S. Varadarajan: The Mathematical Legacy of Harish-Chandra: A Celebration of Representation Theory and Harmonic Analysis, PSPM, AM, 2000
34. (with P. Jorgensen) Osterwalder-Schrader Axioms - Wightman Axioms. *Encyclopaedia of Mathematics, Supplement II* Kluwer, Jan. 2000.
35. (With B. Ørsted Causal Compactification and Hardy Spaces. *Trans. AMS* **351** (1999), 3771-3792
36. (with T. Branson) Asymptotics of the D'Alembertian with Potential on a Pseudo-Riemannian Manifold. *Proceedings of the AMS* **127** (1999), 1339-1345
37. (With A. G. Helminck, J. Hilgert, A. Neumann) A Conjugacy Theorem for Symmetric Spaces. *Mathematische Annalen* **313** (1999), 785-791
38. (with P. Jorgensen) Unitary Representations of Lie Groups with Reflection Symmetry. *J. Funct. Anal.* **158** 26-88 (1998)
39. Open Problems in Harmonic Analysis on Causal Symmetric Spaces. p. 249-270. In: Positivity in Lie Theory; Open Problems. Ed. J. Hilgert, J. D. Lawson, K-H. Neeb, E. B. Vinberg, De Gruyter 1998
40. (with B. Krötz and K-H. Neeb) Spherical Representations and Mixed Symmetric Spaces. *Representation Theory* **1**, 424-461 (1997)
41. (with T. Branson) Helmholtz Operators and Symmetric Space Duality. *Invent. Math.* **129**, 63-74 (1997)
42. (with T. Branson and B. Ørsted) Spectrum Generating Operators, and Intertwining Operators for Representations Induced from a maximal Parabolic Subgroup. *J. Funct. Anal.* **135** (1996) 163-205
43. (with T. Branson and H. Schlichtkrull) Huyghens' Principle in Riemannian Symmetric Spaces. *Math. Ann.* **301**, 445-462 (1995)
44. (with J. Faraut) Causal Semisimple Symmetric Spaces: The Geometry and Harmonic Analysis. In: Ed. Hofmann, Lawson, Vinberg: "Semigroups in Algebra, Geometry and Analysis", 3-32, 1995
45. (with J. Faraut and J. Hilgert) Spherical functions on ordered symmetric spaces. *Ann. Inst. Fourier* **44** (1994), 927-966
46. (with T. Branson and H. Schlichtkrull) A bundle valued Radon transform, with applications to invariant wave equations. *Quart. J. Math. Oxford* **45** (1994) 429-461.
47. (with J. Hilgert) Analytic extensions of representations, the solvable case. *Jap. Journ. Math.* **18** (1993) 213-290
48. (with B. Ørsted) Analytic continuation of Flensted-Jensen Representation. *Manuscripta Math.* **74** (1992), 5-23

49. (with H. Schlichtkrull) Wave propagation on Riemannian symmetric space. *J. Funct. Anal.* **107** (1992) 270-278
50. (with T. P. Branson) Equipartition of Energy for Waves in Symmetric Spaces. *J. Funct. Anal.* **97** (1991), 403-416
51. (with J. Hilgert and B. Ørsted) Hardy Spaces on Affine Symmetric Spaces. *J. reine und angew. Math.* **415** (1991), 189-218
52. (with B. Ørsted) The holomorphic discrete series of an affine symmetric space and representations with reproducing kernels, *Trans. Amer. Math. Soc.* **326** (1991), 385-405
53. Symmetric Spaces of Hermitian Type. *Differential Geometry and Applications* **1** (1991), 195-233
54. (Habilitation) Causal symmetric spaces. *Mathematica Gottingensis* **15** (1990)
55. (with B. Ørsted) The holomorphic discrete series for affine symmetric spaces I. *Journal of Funct. Anal.* **81** (1988), 126-159.
56. Fourier and Poisson transformation associated to a semisimple symmetric space. *Invent. Math.* **90** (1987) 605-629.
57. Die Langlands-Parameter für die Flensted-Jensensche fundamentale Reihe. *Math. Scand.* **55** (1984) 229-244

Book reviews

1. Book review: *Holomorphy and Convexity in Lie Theory* by K.-H. Neeb, De Gruyter Expositions in Mathematics, 8, Berlin, New York, 2000 Jahresbericht der DMV **104** (2002)
2. Book review: 'Lie Groups, Convex Cones and Semigroups', by J. Hilgert, K.H. Hofmann and J.D.Lawson. Oxford Univ. Press. 1989. *Jahresbericht der DMV* **95**, (1992), 5-8

Non refereed articles and chapters in books:

1. (with T. Quinto) Introduction. In: Ed. G. Olafsson and T. Quinto: The Radon Transform, Inverse Problems, and Tomography. Proceedings of Symposia in Applied Mathematics. AMS.
2. (with H. Feichtinger, P. Jorgensen and D. Larson) Introduction to *Mathematisches Forschungsinstitut Oberwolfach Report No. 10/2004, Mini-Workshop: Wavelets and Frames, February 15th-February 21st, 2004*, Oberwolfach, 2004, 3-5
3. Groups, Wavelets, and Function Spaces. In: *Mathematisches Forschungsinstitut Oberwolfach Report No. 10/2004, Mini-Workshop: Wavelets and Frames, February 15th-February 21st, 2004*, Oberwolfach, 2004, 33-36
4. The c -function for symmetric spaces. A Contribution in *Proceedings of an International Workshop on Lie Theory and its applications in physics*. Ed. H-D. Dobner, V. K. Dobrev, J. Hilgert. World Scientific, 2001

5. Unitary Representations with Reflection Symmetry. In: Proceedings of an International Workshop on Lie Theory and its applications in physics. Ed. H-D. Dobner, V. K. Dobrev, J. Hilgert. World Scientific, 1999
6. (with B. Ørsted) Generalization of the Bargmann Transform. Proceedings of a “Workshop on Lie Theory and its Applications in Physics” Clausthal, August 1995. Ed. Dobrev, Döbner, Hilgert. World Scientific, 1996
7. (with B. Ørsted) Is there an orbit method for affine symmetric spaces? In: The Orbit Method in Representation Theory, Proceedings of a Conference held in Copenhagen August to September 1988, Ed. M. Duflo, N.V. Pedersen, M. Vergne. Birkhäuser, 1990
8. Ph D Thesis, Die Langlands-Klassifizierung, unitäre Darstellungen und die Flensted-Jensensche fundamentale Reihe. Göttingen, 1982.
9. Several Lecture notes, posted on my web-page
10. Several publications in *Mathematica Gottingensis*, publication of the *Sonderforschungsbereich Geometry and Analysis* at the University of Göttingen.

Research publications accepted but not yet published

1. (with S. Zheng) Function spaces associated with Schrödinger Operators: The Pöschl-Teller Potential. To appear in *J. Fourier Anal. and Appl.* 2006
2. (with H. Schlichtkrull) The Image of the Heat Transform associated to Root Systems. To appear in *Adv. Math.*

Submitted research publications

1. (with S. Gindikin and B. Krötz) Holomorphic horospherical transform on non-compactly causal spaces. Submitted 2006
2. (with M. Dobrescu) Coxeter Groups, Wavelets, Multiresolution and Sampling. Submitted 2006.

Edited books

In print:

1. (with T. Quinto): The Radon transform, inverse problems, and tomography. Papers from the American Mathematical Society Short Course on the Radon Transform and Applications to Inverse Problems held in Atlanta, GA, January 3–4, 2005. Proceedings of Symposia in Applied Mathematics, **63**. AMS Short Course Lecture Notes. American Mathematical Society, Providence, RI, 2006. xii+158 pp. ISBN: 0-8218-3930-6 44-06 (44A12)
2. (with H. Feichtinger, P. Jorgensen and D. Larson) *Mathematisches Forschungsinstitut Oberwolfach Report No. 10/2004, Mini-Workshop: Wavelets and Frames, February 15th-February 21st, 2004*, Oberwolfach, 2004,

1.3.1.4. Collections of previously unpublished material

1. Spherical functions and spherical Laplace transform on ordered symmetric spaces