



PIMS

A decorative graphic of numerous thin, white, curved lines that originate from the left side and sweep across the middle of the page towards the right, creating a sense of motion and depth.

2011 Selected Publications

PIMS 2011 Publications

Below we list publications for PIMS CRG activities, PDFs and CNRS Researchers. Only publications dated 2011 are listed.

1. Abdallah, N.B., Mellet, A. and Puel, M. Anomalous diffusion limit for kinetic equations with degenerate collision frequency. To appear in *Math. Models and Methods in Applied Sciences*.
2. Adams, M.D. A flexible content-adaptive mesh-generation strategy for image representation. *IEEE Transactions on Image Processing*. 20 (2011), no. 9, 2414-2427.
3. Adams, M.D. An incremental/decremental Delaunay mesh-generation framework for image representation. *Proc. Of IEEE International Conference on Image Processing, Brussels, Belgium*. (2011):193-196.
4. Adcock, B. Gibbs phenomenon and its removal for a class of orthogonal expansions. *BIT* 51(2011), no.1, 7-41.
5. Adcock, B. On the convergence of expansions in polyharmonic eigen-functions. *J. Approximation Theory*. 163 (2011), 1638-1674.
6. Adcock, B. and Hansen, A.C. A generalized sampling theorem for stable reconstructions in arbitrary bases. To appear in *J. Fourier Anal. Appl.*
7. Adcock, B. and Hansen, A.C. Sharp bounds, optimality and a geometric interpretation for generalized sampling in Hilbert spaces. Submitted to *SIAM J. Mathematical Analysis*.
8. Adcock, B. and Hansen, A.C. Stable reconstructions in Hilbert spaces and the resolution of the Gibbs phenomenon. To appear in *Appl. Comput. Harmon. Anal.*
9. Adcock, B. and Huybrechs, D. On the resolution power of Fourier extensions for oscillatory functions. Submitted to *J. Comput. Phys.*
10. Adcock, B. Convergence acceleration of modified Fourier series in one or more dimensions. *Math Comp.* 80 (2011), no. 273, 225-261.
11. Adem, A., Cohen, F. and Giese, E. Commuting elements, simplicial spaces and filtrations of classifying spaces. *Mathematical Proceedings of the Cambridge Philosophical Society*, Available on CJO 2011 doi:10.1017/S0305004111000570.
12. Adem, A., Duman, A. and Gomez, J. Cohomology of toroidal orbifold quotients. *J. Algebra*. 344 (2011), 114-136.
13. Agueh, M. and Carlier, G. Barycenters in the Wasserstein space. *SIAM Journal of Mathematical Analysis*. 43 (2011), no.2, 904-924.
14. Agueh, M., Illner, R. and Richardson, A. Analysis and simulations of a refined flocking and warming model of Cucker-Smale type. *Kinetic and Related Models*. 4 (2011), no.1, 1-16.
15. B. Ahmadi, F. Alinaghypour, S. Fallat, Y. Fan, K. Meagher, and S. Nasserar, The minimum rank of universal adjacency matrices. Submitted to *J. Linear Alg. Appl.*, Ref. No. LAA-D-11-00072, 24 pages.
16. Akhunov, T. Local well posedness of quasi-linear systems generalizing KdV. To appear in *Commun. Pure and Applied Analysis*.
17. Allali, J., Chauve, C., Ferraro, P. and Gaillard, A. Efficient chaining of seeds in ordered trees. To appear in *Proc. 21st International Workshop on Combinatorial Algorithms (IWOC)*.
18. Angel, O., Benjamini, I., Gurel-Gurevich, O., Meyerovitch, T. and Peled, R. Stationary map coloring. To appear in *Annales de l'Institut Henri Poincare*.
19. Anisimov, P., Dowling, J. and Sanders, B. Objectively discerning Autler-Townes splitting from electromagnetically induced transparency. To appear in *Physical Review Letters*.
20. Argerami, M., Farenick, D. and Massey, P. Injective envelopes and local multiplier algebras of some spatial continuous trace C^*

- algebras. To appear in *Quarterly Journal of Mathematics (Oxford)*.
21. Argerami, M., Farenick, D. and Massey, P. Second-order local multiplier algebras of continuous trace C^* -algebras. Preprint (2011) *arXiv*: OA/1102.4869.
 22. Ashander, J., Krkosek, M. and Lewis, M. Aqua-culture-induced changes to dynamics of migratory hosts and specialist parasite: A case study of pink salmon and sea lice. To appear in *Theoretical Ecology*.
 23. Bailey, R. and Cameron, P. Base size, metric dimension and other invariants of groups and graphs. *Bull. London Math. Soc.* 43 (2011), 209-242.
 24. Bailey, R. and Meagher, K. On the metric dimension of Grassmann graphs. To appear in *Discrete Mathematics and Theoretical Computer Science*.
 25. Bailey, R. and Stevens, B. Uncoverings on graphs and network reliability. *Australasian Journal of Combinatorics.* 50 (2011), 219-231.
 26. Bailey, R., Burgess, A., Cavers, M. and Meagher, K. Generalized covering designs and clique coverings. *J. Combinatorial Designs.* 19 (2011), 378-406.
 27. Berenbrink, P., Cooper, C., Friedetzky, T., Friedrich, T. and Sauerwald, T. Randomized diffusion for indivisible loads. To appear in *Proc. 22nd ACM-SIAM Symposium on Discrete Algorithms.* (2011), 429-439.
 28. Berenbrink, P., Elsasser, R., Friedetzky, T., Nagel, L. and Sauerwald, T. Faster coupon collecting via replication with applications in gossiping. To appear in *Proc. Of the 36th International Symposium on Math. Foundations of Computer Science.* (2011), 72-83.
 29. Berenbrink, P., Hofer, M., Sauerwald, T. Distributed selfish load balancing on networks. To appear in *Proc. Of 22nd ACM-SIAM Symposium on Discrete Algorithms.* (2011), 1487-1497.
 30. Berezansky, L. and Braverman, E. New stability conditions for linear difference equations using Bohl-Perron type theorems. *Journal of Difference Equations and Applications.* 17 (2011), no.5, 657-675.
 31. Berezansky, L. and Braverman E. New stability conditions for linear differential equations with several delays. *Abstract and Appl. Anal.* (2011), 178568 – 178586.
 32. Berezansky, L. and Braverman, E. On Nonoscillation of advanced differential equations with several terms. *Abstract and Appl. Anal.* 1085-3375 (2011), 637142 – 637155.
 33. Berezansky, L. and Braverman, E. On some constants for oscillation and stability of delay equations. *Prroc. Amer. Math. Soc.* 139 (2011), no. 11, 4017-4026.
 34. Berezansky, L. and Braverman, E. Preservation of exponential stability for equations with several delays. *Mathematica Bohemica.* 136 (2011), no. 2, 135-144.
 35. Berezansky, L. and Braverman, E. Stability of linear differential equations with a distributed delay. *Commun. Pure Appl. Anal.* 10 (2011), no. 5, 1361-1375.
 36. Berezansky, L., Braverman, E. and Domoshnitsky, A. On nonoscillation of systems of delay equations. *Funkcialaj Ekvacioj.* 54(2011), 275-296.
 37. Biasse, J.-F. An $L(1/3)$ algorithm for ideal class group and regulator computation in certain number fields. To appear in *Mathematics of Computation.*
 38. Blokh, A.M., Mimbs, D., Oversteegen, L.G. and Valkenburg, K.I.S. Laminations in the language of leaves. Preprint.
 39. Braverman, E. and Karpuz, B. Nonoscillation of second-order dynamic equations with several delays. *Abstract and Applied Analysis.* 1085-3375 (2011), 591254 – 591287.
 40. Braverman, E. and Karpuz, B. On oscillation of differential and difference equations with non-monotone delays. *Appl. Math. Computat.* 218 (2011): 3880-3887.
 41. Braverman, E. and Saker, S.] On a difference equation with exponentially decreasing nonlinearity. *Discrete Dynamics in Nature and Society.* (2011), ID 147926.
 42. Bravyi, S., Harrow, A. and Hassidim, A. Quantum algorithms for testing properties of distributions. *IEEE Trans. Information Theory.* 57 (June 2011), no. 6, 3971-3981.
 43. Brownlowe, N., an Huef, A., Laca, M. and Raeburn, I. Boudnary quotients of the Toeplitz algebra of the affine semigroup over the natural numbers. *Ergodic Theory Dynam.*

- Systems*. (doi: 10.1017/S0143385710000830), (2011).
44. Buckingham, P. Connecting homomorphisms associated to Tate sequences. *Acta Arith.* 149 (2011), no. 4, 383-402.
 45. Caffarelli, L., Mellet, A. and Sire, Y. Traveling waves for a boundary reaction-diffusion equation. *arXiv* (2011).
 46. Carey, A.L., Phillips, J., Putnam, I.F. and Rennie, A. Families of type III KMS states on a class of C^* -algebras containing O_n and Q_N . *J. Funct. Anal.* 260 (2011), no.6, 1631-1681.
 47. Case, J., Jain, S., Le, T., Ong, Y., Semukhin, P. and F. Stephan: Automatic learning of subclasses of pattern languages. *LATA* (2011), 192-203.
 48. Case, J., Jain, S., Ong, Y., Semukhin, P. and F. Stephan: Automatic learners with feedback queries. *CiE* (2011), 31-40.
 49. Casey, S., Dunajski, M., Gibbons, G. and Warnick, C. *Phys. Rev.* D83 (2011), 084047.
 50. Chapuy, G. A new combinatorial identity for unicellular maps, via a direct bijective approach. To appear in *Advances in Applied Mathematics*.
 51. Chapuy, G. and Bernardi, O. A bijection for covered maps, or a shortcut between Harer-Zagier's and Jackson's formulas. *Journal of Combinatorial Theory, Series A.* 118 (2011), no. 6, 1718-1748.
 52. Chapuy, G. and Bernardi, O. Counting unicellular maps on non-orientable surfaces. *Advances in Applied Mathematics.* 47 (2011), no. 2, 259-275.
 53. Chapuy, G., Bousquet-Melou, M. and Preville-Ratelle, L. Tamari lattices and parking functions: proof of a conjecture of F. Bergeron. *arXiv* (2011).
 54. Chapuy, G., De Vos, M., McDonald, J., Mohar, B. and Scheide, D. Packing triangles in weighted graphs. *arXiv* (2011).
 55. Chapuy, G., Fusy, E., Gimenez, O., Mohar, B. and Noy, M. Asymptotic enumeration and limit laws for graphs of fixed genus. *Journal of Combinatorial Theory, Series A.* 118 (2011), no.3, 748-777.
 56. Chen, J., Cubitt, T., Harrow, A. and Smith, G. Entanglement can completely defeat quantum noise. *arXiv*: 1109.0540. To appear in *Phys.Rev. Lett.* (2011).
 57. Chi, Y., Qi, B., Zhu, W., Qian, L., Lo, H., Youn, S., Lvovsky, A. and Tian, L. A balanced homodyne detector for high-rate Gaussian-modulated coherent-state quantum key distribution. *New J. Phys.* 13 (2011), no. 1, 013003 (18pp).
 58. Choksi, R. and Peletier, M. Small volume fraction limit of the Diblock Copolymer problem: II diffuse interface functional. *SIAM Journal of Mathematical Analysis.* 43 (2011), no.2, 739-763.
 59. Choksi, R., Maras, M. and Williams, J. 2D phase diagram for minimizers of a Cahn-Hilliard functional with long-range interactions. To appear in *SIAM Journal of Applied Dynamical Systems* (2011).
 60. Choksi, R., van Gennip, Y. and Oberman, A. Anisotropic total variation regularized \mathcal{L}_1 -approximation and denoising/deblurring of 2D bar codes. *Inverse Problems and Imaging.* 5 (2011), no.3, 591-617.
 61. Chu, C.-H. and Lau, A.T. Harmonic functions on topological groups and symmetric spaces. *Math. Z.* 268 (2011), 649-673).
 62. Cockett, R., Dias, X., Gallagher, J. and Hrubes, P. Timed sets, complexity and computability. Submitted (2011).
 63. Conway, J. and Coombs, D. A stochastic model of latently infected cell reactivation and viral blip generation in treated HIV patients. *PLoS Computat. Bio.* (2011) 7(4):e1002033.
 64. Coombs, D., Das, R. and Morrison, J. Membrane domain detection and characterization with fluor-escence microscopy and mathematical modeling. To appear in *Cellular Domains*, I. Nabi (Ed.), Wiley Interscience.
 65. Coombs, D., Dushek, O. and van der Merwe, P. A review of mathematical models for T cell receptor triggering and antigen discrimination. To appear in *Current Mathematical Models in T Cell and B Cell Biology*, C. Molina-Paris (Ed.), Springer.
 66. Cuntz, J., Deninger, C. and Laca, M. C^* -algebras of Toeplitz type associated with algebraic number fields. Preprint (2011) *arXiv*: OA/1105.5352.
 67. Dao, P., Wang, K., Collins, C., Ester, M., Lapuk, A. and Cenk Sahinalp, S. Optimal discriminative sub-networks markers predict

- responses to chemother-apies. Submitted to Proc. 19th Annual Int. Conferece on Intelligent Systems for Molecular Biology (ISMB).
68. de la Lande, A., Rezac, J., Levy, B., Sanders, B. and Salahub, D. Transmission coefficients for chemical reactions with multiple states: the role of quantum decoherence. *Journal of the American Chemical Society*. 133 (2011), no. 11, 3883-3894.
 69. Dembele, L., Greenberg, M. and Voight, J. Nonsolvable number fields ramified only at 3 and 5. To appear in *Compositio Mathematica*.
 70. Deng, J., Popescu, C. and Wong, Y. Stochastic collocation method for secondary bifurcation of a nonlinear aerolastic system. *J. Sound and Vibration*. 330 (2011), 3006-3023.
 71. Deng, J., Popescu, C. and Wong, Y. Uncertainty investigations in nonlinear aeroelastic systems. *J. Computat. Appl. Mathematics*. 235 (2011), 3910-3920.
 72. Dijkstra, J.J. and Valkenburg, K.I.S. Classification of Erdos type subspaces of nonseparable ℓ^p spaces. To appear in *Top. Appl.*
 73. Dijkstra, J.J. and Valkenburg, K.I.S. Classifying Erdős type spaces of higher descriptive complexity. Preprint.
 74. Dijkstra, J.J., Valkenburg, K.I.S. and Visser, D. Nonseparable complete Erdős spaces and submeasures on uncountable cardinals. *Topology Proc.* 37 (2011): 481-502.
 75. Dobra, A. and Lenkoski, A. Copula Gaussian graphical models and their application to modelling functional disability data. *Ann. Appl. Stat.* 5 (2011), 969-993.
 76. Doerr, B., Goldberg, L., Minder, L., Sauerwald, T. and Scheideler, C. Stabilizing consensus with the power of two choices. In: *Proc. Of the 23rd Annual ACM Symposium on Parallelism in Algorithms and Architectures*. (2011), 149-158.
 77. Dushek, O., Aleksic, M., Wheeler, R., Zhang, H., Cordoba, S., Peng, Y., Chen, J., Cerundolo, V., Dong, T., Coombs, D., and P. van der Merwe. Antigen potency and maximal efficacy reveal a mechanism of efficient T cell activation. *Science Signaling*. (2011), 4: ra39.
 78. Duval, C. and Gotay, M. Quantization via deformation of prequantization. Submitted to *Lett. Math. Phys.*
 79. Echterhoff, S. and Emergon, H. Structure and K-theory of crossed products by proper actions. *Expo. Math.* 29 (2011): 300-344.
 80. Echterhoff, S. and Laca, M. The primitive ideal space of the regular C^* -algebra of the affine semigroup over the ring of algebraic integers. Preprint (2011).
 81. Elsasser, R. and Sauerwald, T. Tight bounds for the cover time of multiple random walks. *Theor. Comput. Sci.* 412 (2011), no. 24, 2623-2641.
 82. El Smaily, M. The homogenized equation of a heterogenous Reaction-Diffusion model involving pulsating travelling fronts. *Communications in Mathematical Sciences*. 9 (2011), no. 4, 1113-1128.
 83. El Smaily, M. The non-monotonicity of the KPP speed with respect to diffusion in the presence of a shear flow. *arXiv* (2011).
 84. El Smaily, M. and Kirsch, S. The speed of propagation for KPP reaction-diffusion equations within large drift. *Adv. Diff. Equations*. 16 (2011), no. 3-4, 361-400.
 85. El Smaily, M., Hamel, F. and Huang, R. Two dimensional curved fronts in a periodic shear flow. *Nonlinear Anal.: Theory, Methods & Appl.* 74 (2011), 6469-6486.
 86. Emerson, H. Lefschetz numbers for C^* -algebras. *Canad. Math. Bull.* 54 (2011): 82-99.
 87. Emerson, H. and Nica, B. Fredholm modules and boundary actions of hyperbolic groups. Preprint (2011).
 88. Farenick, D. and Kozdron, M.J. Conditional expectation and Bayes' rule for quantum random variables and positive operator valued measures. Preprint (2011). *arXiv*: PR/1111.5638.
 89. Farenick, D. and Paulsen, V. Operator system quotients of matrix algebras and their tensor products. To appear in *Mathematica Scandinavica*.
 90. Farenick, D. Arverson's Criterion for Unitary Similarity. *Linear Algebra and its Applications*. 435 (2011), no.4, 769-777
 91. Farenick, D., Futorny, V., Gerasimova T., Sergeichuk V. and Shvai, N. A Criterion for Unitary Similarity of Upper Triangular

- Matrices in General Position. *Linear Algebra and its Applications*. 435 (2011), no. 6, 1356-1369.
92. Farenick, D., Gerasimova, T. and Shvai, N. A complete unitary similarity invariant for unicellular matrices. *Linear Algebra and its Applications*. 435 (2011), no.2, 409-419.
 93. Farenick, D., Kavruk, A. and Paulsen, V. C^* -algebras with the weak expectation property and a multivariable analogue of Ando's theorem on the numerical radius. Preprint (2011). *arXiv*: OA/1107.0418.
 94. Farenick, D., Plosker, S. and Smith, J. Classical and nonclassical randomness in quantum measurements. To appear in *J. Math. Phys.*(2011).
 95. Fazly, M. and Ghoussoub, N. On the Henon-Lane-Emden conjecture. *arXiv* (2011), 20pp.
 96. Fetecau, R. and Muraki, D. A dispersive regular-ization of the modulational instability of stratified gravity waves. *Wave Motion*. 48 (2011), no.7, 667-679.
 97. Fetecau, R. Collective behavior of biological aggregations in two dimensions: a nonlocal kinetic model. *Mathematical Models and Methods in Applied Sciences*. 21 (2011), no. 7, 1539-1569.
 98. Fetecau, R., Huang, Y. and Kolokolnikov, T. Swarm dynamics and equilibria for a nonlocal aggregation model. *Nonlinearity*. 24 (2011), no.10, 2681-2716.
 99. Floricel, R. A conjugacy criterion for pure E_0 -semigroups. *J. Math. Anal. Appl.* 373 (2011): 175-178.
 100. Fontein, F. The infrastructure of a global field of arbitrary unit rank. *Math. Comp.* 80 (2011), no. 276, 2325-2357.
 101. Fortescue, B. and Gour, G. Reducing the quantum communication cost of quantum secret sharing. *arXiv.org*: 1108.5541. (2011).
 102. Friedlander, M., Mansour, H., Saab, R. and Yilmaz, O. Recovering compressively samples signals using partial support information. *IEEE Trans. Information Theory*. In press.
 103. Friedrich, T., Sauerwald, T. and Vilenchik, D. Smoothed analysis of balancing networks. *Random Struct. Algorithms* 39 (2011), no.1, 115-138.
 104. Froese, R., Hasler, D. and Spitzer, W. A geometric approach to absolutely continuous spectrum for discrete Schrödinger operators. *Progress in Probability*. 64 (2011), 201-226.
 105. Ghoussoub, N. and Moameni, A. A self-dual polar factorization for vector fields. *arXiv* (2011), 17pp.
 106. Giakkoupis, G. Tight bounds for rumor spreading in graphs of a given conductance. To appear in *Theory of Computing Systems, STACS'11 special issue*. (2011).
 107. Giakkoupis, G. and Sauerwald, T. Rumor spreading and vertex expansion. *Proc. 23rd ACM-SIAM Symp. on Discrete Algorithms (SODA)*, 2012.
 108. Giakkoupis, G. and Schabanel, N. Optimal path search in small worlds: Dimension matters. *Proc. 43rd ACM Symp. on Theory of Computing (STOC)*. (2011), 393-402.
 109. Gibbons, G.W., Houri, T., Kubiznak, D. and Warnick, C.M. Some spacetimes with higher rank killing-stackel tensors. *Phys. Lett.* B700 (2011), 68-74.
 110. Gibbons, G.W. and Warnick, C.M. The geometry of sound rays in a wind. *Contemp.Phys.* 52 (2011), 197-209.
 111. Gibbons, G.W. and Warnick, C.M. The helical phase of chiral nematic liquid crystal as the Bianchi VII(0) group manifold. *Phys. Rev.* E84 (2011), 031709
 112. Gibbons, G.W., Warnick, C. M. and Wong, W.W. Non-existence of Skyrmion-Skyrmion and Skyrmion-anti-Skyrmion static equilibria. *J. Math. Phys.* 52 (2011), 012905.
 113. Goh, S., Han, B. and Shen, Z. Tight periodic wavelet frames and approximation orders. *Appl. Computat. Harmonic Anal.* 31 (2011), no. 2, 228-248.
 114. Gonzalez Tokman, C. and Quas, A. A semi-invertible operator Oseledets theorem. *arXiv*: 1105.5609 (2011), 45 pp.
 115. Greenberg, M. and Voight, J. Computing systems of Hecke eigenvalues associated to Hilbert modular forms. To appear in *Math. Comp.*
 116. Guay, N. and Ma, X. From quantum loop algebras to Yangians. Submitted.
 117. Guay, N. and Ma, X. Twisted Yangians, twisted quantum loop algebras and affine Hecke algebras of type BC. Submitted.
 118. Guermond, J.L. and Mineev, P. A new class of massively parallel direction splitting for the incompressible Navier-Stokes equations.

- Computer Methods in Appl. Mech. and Eng.* 200 (2011), 2083-2093.
119. Guermond, J.L. and Mineev, P. Start-up flow in a three-dimensional lid-driven cavity by means of a massively parallel direction splitting algorithm. *Int. J. Numerical Methods in Fluids*. In press.
 120. Guermond, J.L., Mineev, P. and Salgado, A. Convergence analysis of a class of massively parallel direction splitting algorithms for the Navier-Stokes equations in simple domains. *Math. Computat.* In press.
 121. Gustafson, S. and Koo, E. Global well-posedness for 2D radial Schrodinger maps into the sphere. *arXiv* (2011).
 122. Gustafson, S. and Phan, T. Stable directions for degenerate excited states of nonlinear Schroedinger equations. To appear in *SIAM J. of Math. Anal.* (2011).
 123. Han, B. Nonhomogeneous wavelet systems in high dimensions. To appear in *Appl. Computat. Harmonic Anal.*
 124. Han, B. Symmetric orthogonal filters and wavelets with linear-phase moments. *J. Computat. Appl. Math.* 236 (2011), 482-503.
 125. Han, B. Wavelets and framelets within the framework of nonhomogeneous wavelet systems. To appear in *Proc. 13th Int. Conf. Approximation Theory*.
 126. Han, B., Kutyniok, G. and Shen, Z. Adaptive multiresolution analysis structures and shearlet systems. *SIAM Journal on Numerical Analysis*. 49 (2011), 1921-1946.
 127. Han, B., Mo, Q. and Shen, Z. Small support spline Riesz wavelets in low dimensions. *J. Fourier Analysis and Applications*. 17 (2011), 535-566.
 128. Harrow, A., Montanaro, A. and Short, A. Limitations on quantum dimensionality reduction. *Proc. ICALP 2011*. 6755/2011 (2011), 86-97.
 129. Harrow, W. and Leung, D. A communication-efficient nonlocal measurement with application to communication complexity and bipartite gate capacities. *IEEE Transactions on Information Theory*. 57 (2011), no. 8, 5504-5508.
 130. He, B., MacRae, A., Han, Y., Lvovsky, A. and Simon, C. Transverse multimode effects on the performance of photon-photon gates. *Physical Review A*. 83 (2011), no. 2, 5 pp.
 131. Helfgott, H. and de Roton, A. Improving Roth's theorem in the primes. *Int. Math. Res. Not.* 4 (2011), 767-783.
 132. Hentschel, A. and Sanders, B. Ordered measurements of permutation-invariant qubit strings. *J. of Phys. A: Math. Theor.* 44 (2011), no. 11, 16 pp.
 133. Heshami, K., Sangouard, N., Minar, J., de Riedmatten, H. and Simon, C. Precision requirements for spin-echo-based quantum memories. *Physical Review A*. 83 (2011), no. 3, 9 pp.
 134. Hoff, D., Johnson, C. and Nasserar, S. TPK-completion Problem for Shapes, *Linear Algebra and its Applications*, In Press, available online (2011).
 135. Hoheisel, T., Kanzow, C., Mordukhovich, B. and Phan, H. Generalized Newton's method based on graphical derivatives. *Nonlinear Anal.* 75 (2012): 1324-1340.
 136. Hrubes, P. and Tzameret, I. Short proofs of the determinant identities. Submitted.
 137. Hrubes, P., Wigderson, A. and A. Yehudayo. An asymptotic bound on integer sums of squares. To appear in *Canadian Mathematical Bulletin*. (2011).
 138. Hrubes, P. and A. Yehudayo, A. Arithmetic complexity in ring extensions. *Theory of Computing* 7 (2011): 119-129.
 139. Hrubes, P. and A. Yehudayo, A. Homogenous formulas and symmetric polynomials. *Computational Complexity* 20 (2011), no. 3, 559-578.
 140. Imbert, C. and Mellet, A. Existence of solutions for a higher order non-local equation appearing in crack dynamics. *arXiv* (2011).
 141. Imbert, C. and Mellet, A. Electrified thin films: Global existence of non-negative solutions. *arXiv* (2011).
 142. Jain, S., Luo, Q., Semukhin, P. and F. Stephan. Uncountable automatic classes and learning. *Theor. Comput. Sci.* 412 (2011), no. 19, 1805-1820.
 143. Jakobi, M., Simon, C., Gisin, N., Bancal, J., Branciard, C., Walenta, N. and Zbinden, H. Practical private database queries based on a quantum-key-distribution protocol. *Physical Review A*. 83 (2011), no. 2, 022301 (6 pp).

144. Julien, A. and Savinien, J. Embeddings of self-similar ultrametric Cantor sets. *Topology Appl.* 158 (2011): 2148-2157.
145. Julien, A. and Savinien, J. Tiling Groupoids and Bratteli Diagrams II: Structure of the Orbit equivalence relation. *Ann. Henri Poincare* (DOI: 10.1007/s00023-011-0121-4).
146. Julien, A. and Savinien, J. Transverse Laplacians for substitution tilings. *Comm. Math. Phys.* 301 (2011): 285-318.
147. Kamli, A., Moiseev S. and Sanders, B. Quantum informatics with plasmonic metamaterials. *Int. J. Quantum Information.* 9 (2011), suppl. issue 1, 263-279.
148. Kang, K., Miura, H. and Tsai, T-P. Asymptotics of small exterior Navier-Stokes flows with non-decaying boundary data. *arXiv* (2011).
149. Kaniuth, E., Lau, A and Ulger, A., Power bounded in the Fourier algebra and Fourier Stieltjes algebras and other commutative Banach algebras. *J. Functional Analysis* 260 (2011), no 8, 2366-2386.
150. Karabash, I. Optimization of quasi-normal eigen-values for 1-D wave equations in inhomogeneous media; description of optimal structures. *arXiv* (2011).
151. Killough, D. and Putnam, I. Bowen measure from heteroclinic points. *arXiv*. 1104.1156v1 (2011).
152. Killough, D. and Putnam, I. Ring and module structures on dimension groups associated with a shift of finite type. *arXiv*. 1104.1154v1 (2011).
153. Kim, J. and Sanders, B. Unified entropy, entanglement measures and monogamy of multi-party entanglement. *J. of Phys. A: Math. Theor.* 44 (2011), no.29, 14 pp.
154. Korobenko, L. and Braverman, E. On permanence and stability of a logistic model with harvesting and a carrying capacity dependent diffusion. *J. Nonlinear Systems and Applications.* 2 (2011), no. 1-2, 9-15.
155. Kubiznak, D., Warnick, C.M. and Krtous, P. Hidden symmetry in the presence of fluxes. *Nucl. Phys.* B844 (2011), 185-198.
156. Laca, M. and Neshveyev, S. Type III₁ equilibrium states of the Toeplitz algebra of the affine semigroup over the natural numbers. *J. Funct. Anal.* 261 (2011): 169-187.
157. Laca, M. Neshveyev, S. and Trifkovic, M. Bost-Connes systems, Hecke algebras, and induction. To appear in *J. Noncommut. Geom.*(2011). *arXiv*: PA/1010.4766.
158. Laca, M, Raeburn, I. and Ramagge, J. Phase transition on Excel crossed products associated to dilation matrices. *arXiv*. 1003.2097v1 (2011), 30 pp.
159. Lamm, T. and Chen, J. A Bernstein type theorem for entire Willmore graphs. To appear in *J. Geom. Anal.*
160. Lamm, T. and Koch, H. Geometric flows with rough initial data. To appear in *Asian J. Math.*
161. Lamm, T., Gong, H. and Wang, C. Boundary partial regularity for a class of biharmonic maps. To appear in *Calc. Var.*
162. Lamm, T., Metzger, J. and Schulze, F. Foliations of asymptotically flat manifolds by surfaces of Willmore type. *Mathematische Annalen.* 350 (2011), no.1, 1-78.
163. Lee, S., Kim, J. and Sanders, B. Distribution and dynamics of entanglement in high-dimensional quantum systems using convex-roof extended negativity. *Phys. Lett A.* 375 (2011), no. 3, 411-414.
164. Lenkoski, A. and Dobra, A. Computational aspects related to inference in Gaussian graphical models with the G-Wishart prior. *J. Computat. Graphical Stat.* 20 (2011), 140-157.
165. Li, Y., Browne, D., Kwek, L., Raussendorf, R. and Wei, T. Thermal states as universal resources for quantum computation with always-on interactions. *arXiv*: 1102 3210 (2011).
166. Lindquist, J., Ma, J., van den Driessche, P. and Willbroodse, F. Effective degree network disease models. *Journal of Math. Bio.* 62 (2011), no. 2, 142-164.
167. Lisonek, P. An Efficient characterization of a family of hyperbent functions. *IEEE Transactions on Information Theory.* 57 (2011), 6010-6014.
168. Lisonek, P. and Moisiu, M. On zeros of Kloosterman sums. *Designs, Codes and Cryptography.* 59 (2011), 223-230.
169. Lopez, M. and Gotay, M. Covariantizing classical field theories. To appear in *J. Geom. Mech.*

170. Ma, X. and Jordan, D. Quantum symmetric pairs and representations of double affine Hecke algebras of type (C_n^*, C_n) . *Selecta Math. New Ser.* 17(2011), 139-181.
171. Ma, X., Etingof, P., Felder, G. and Veselov, A. On elliptic Calogero-Moser systems for complex crystal-lographic reflection groups. *J. Algebra.* 329 (2011), 107-129.
172. Mansour, H. and Yilmaz, O. Weighted 1-norm minimization with multiple weighting sets. *SPIE Wavelets and Sparsity . XIV*, San Diego. (2011).
173. Markham, D. and Sanders, B. Erratum: graph states for quantum secret sharing. *Physical Review A.* 83 (2011), no. 1, 1 p.
174. Marleau, J., Jin, Y., Bishop, J., Fagan, W. and Lewis, M. A stoichiometric model of early plant primary succession. *Amer. Naturalist.* 177 (2011), no. 2, 233-245.
175. McKenzie, H., Lewis, M., Jacobsen, J. and Ro, J. Analysis of a spatiotemporal model for a stream population. Accepted to *SIAM J. on Applied Dynamical Systems*.
176. Mellet, A. Fractional diffusion limit for collisional kinetic equations: a moments method. To appear in *Indiana University Math Journal* (2011).
177. Mellet, A., Mischler, S. and Mouhot, C. Fractional diffusion limit for collisional kinetic equations. *Arch. Rational Mechanics and Analysis.* 199 (2011), 493-525.
178. Mellet, A. Some mathematical aspects of capillary surfaces. To appear in *Panoramas et syntheses* (2011).
179. Meyerovitch, T. Ergodicity of Poisson products and applications. Submitted. *arXiv: 1107.0520v1*.
180. Meyerovitch, T. Gibbs and equilibrium measures for some families of subshifts. Submitted. *arXiv:0903.1426v1*.
181. Meyerovitch, T. Growth-type invariants for Z^d subshifts of finite type and arithmetical classes of real numbers. *Inventiones Mathematicae.* 184 (2011), 567-589.
182. Meyerovitch, T. On multiple and polynomial recurrent extensions of infinite measure preserving transformations. Submitted. *arXiv:math/0703914v1*.
183. Meyerovitch, T. Quasi-factors for infinite-measure preserving transformations. To appear in *Israel J. Math.*
184. Miura, H. and Tsai, T. Point singularities of 3D stationary Navier-Stokes flows. To appear in *Journal of Mathematical Fluid Mechanics* (2011).
185. Mordukhovich, B. and Phan, H. Rated extremal principle for finite and infinite systems with applications to optimization. *Optimization* 60 (2011).
186. Mordukhovich, B. and Phan, H. Tangential extremal principle for finite and infinite systems, I: Basic Theory. To appear in *Math. Program.*
187. Mordukhovich, B. and Phan, H. Tangential extremal principle for finite and infinite systems, II: Applications to semi-infinite and multiobjective optimization. To appear in *Math. Program.*
188. Mordukhovich, B., Nam, N. and Phan, H. Variational analysis of marginal function with applications to bilevel programming problems. *J. Optim Theory Appl.* 152 (2011), no. 3.
189. Nica, B. Homotopical stable ranks for Banach algebras. *J. Functional Analysis.* 261 (2011), 803-830.
190. Nica, B. Proper isometric actions of hyperbolic groups on L^p – spaces. Preprint (2011).
191. Nica, B. Spectral morphisms, K-theory, and stable ranks. To appear in *Perspectives on Noncommutative Geometry.* 61 (2011), Fields Commun. Series, 14 pp.
192. Nica, B. The unreasonable slightness of E_2 over imaginary quadratic rings. *American Mathematical Monthly.* 118 (2011), 455-462.
193. Oberman, A and Esedoglu, S. Fast semi-implicit solvers for the infinity Laplace and p-Laplace equations. *arXiv* (2011).
194. Oberman, A. and Friedlander, M. A numerical method for variational problems over the cone of convex functions. *arXiv* (2011).
195. Oberman, A. and Froese, B. Convergent finite difference solvers for viscosity solutions of the elliptic Monge-Ampere equation in dimensions two and higher. To appear in *SIAM J. Numerical Analysis.*
196. Oberman, A and Froese, B. Fast finite difference solvers for singular solutions of the elliptic Monge-Ampere equation. *J. Computat. Phys.* 230 (2011), no.3, 818-834.

197. Oberman, A., Osher, S., Takei, R and Tsai, R. Numerical methods for anisotropic mean curvature flow based on a discrete time variational formulation. To appear in *Communications in Mathematical Sciences*.
198. Oversteegen, L.G. and Valkenburg, K.I.S. Characterizing isotopic continua in the sphere. *Proc. Amer. Math. Soc.* 139 (2011): 1495-1510.
199. Powell, A., Tanner, J., Wang, Y. and Yilmaz, O. Coarse quantization for random interleaved sampling of bandlimited signals. *ESAIM: Mathematical Modelling and Numerical Analysis*. In press.
200. Putnam, I., Carey, A., Phillips, J. and Rennie, A. Families of Type III KMS states on a class of C^* -algebras containing O_n and Q_N . To appear in *J. Functional Analysis*.
201. Putnam, I., Carey, A., Phillips, J. and Rennie, A. Type III KMS states on a class of C^* -algebras containing O_n and Q_N and their modular index. To appear in *Proc. of Fields Institute Conference on Noncommutative Geometry*.
202. Rahimi-Keshari, S., Scherer, A., Mann, A., Rezaekhani, A., Lvovsky A. and Sanders, B. Quantum process tomography with coherent states. *New J. Phys.* 13 (2011), no. 1, 013006 (17 pp).
203. Rajakaruna, H., Strasser, C. and Lewis, M. A novel approach to indentify non-invasible habitats for marine copepods using temperature-dependent R_0 as a metric. Submitted to *Biological Invasions*.
204. Rajakaruna, H., Potapov, A. and Lewis, M. Impact of stochasticity on risk of invasion windows under propagule flow. To appear in *Theor. Population Biology*.
205. Rajani, V., Carrero, G., Golan, D., de Vries, G. and Cairo, C. Analysis of molecular diffusion by first-passage time variance identifies the size of confinement zones. *Biophys. J.* 100, (2011), no. 6, 1463-1472.
206. Rehmeier, J. Mathematical and statistical challenges for sustainability. *NSF Report*. 2011.
207. Roshchenko, A., Finaly, W. and Minev, P. The aerodynamic behaviour of fibers in a linear shear flow. *Aerosol Sci. Tech.* 45 (2011), 1260-1271.
208. Ross, I., Khouider, B. and McFarlane, N.A. A grid-scale instability in a popular cumulus parametrization. To appear in *Theor. Computat. Fluid Dynamics*.
209. Saglamyurek, E., Sinclair, N., Jin, J., Slater, J., Oblak, D., Bussieres, F., George, M., Ricken, R., Sohler, W. and Tittel, W. Broadband waveguide quantum memory for entangled photons. *Nature*. 469 (2011), no. 7331, 512-515.
210. Sanders, B.C. Large optical nonlinearities with few photons. In: *Proc. of Advances in Photonics of Quantum Computing, Memory and Communication IV*, 794801-1-794801-6. *SPIE Publications*, Bellingham, 2011.
211. Sangouard, N., Simon, C., de Riedmatten, H. and Gisin, N. Quantum repeaters based on atomic ensembles and linear optics. *Rev. Mod. Phys.* 83 (2011), no. 1, 33-80.
212. Sarvepalli, P. Efficient decoding of topological color codes. *arXiv: 1111.0831v1* (2011).
213. Sauerwald, T. and Stauffer, A. Rumor spreading and vertex expansion on regular graphs. To appear in *Proc. Of the 22nd ACM-SIAM Symposium on Discrete Algorithms* (2011).
214. Scherer, A., Sanders, B. and Tittel, W. Long-distance practical quantum key distribution by entanglement swapping. *Optics Express*. 19 (2011), no. 4, 3004-3018.
215. Shizgal, B. Pseudospectral methods of solution of the linear and linearized Boltzmann equations. *Transport and Relaxation AIP Conf. Proc.* 1333 (2011) 986-991.
216. Sinha, K. and Lalin, M. Higher Mahler measure for cyclotomic polynomials and Lehmer's question. To appear in *Ramanujan Journal*.
217. Sospedra-Alfonso, R. and Shizgal, B. Henry-Greenstein model in the shape relaxation of dilute gas mixtures. Submitted to *Trans. Theoretical and Statistical Physics*.
218. Sospedra-Alfonso, R. and Shizgal, B. Kullback-Leibler entropy in the electron distribution shape relaxation for electron-atom thermalization. *Phys. Rev.* E84 (2011) 041202.
219. Sospedra, R., Agueh, M. and Illner, R. Global classical solutions of the relativistic

- Vlasov-Darwin system with small Cauchy data: the generalized variables approach. *arXiv* (2011).
220. Stange, K. and Levine, L. How to make the most of a shared meal: plan the last bite first. *arXiv*. 1104.0961 (2011).
221. Stange, K.E. and Shparlinski, I.E. Character sums with division polynomials. To appear in *Canadian Mathematical Bulletin*.
222. Stange, K. and Silverman J. Amicable pairs and aliquot cycles for elliptic curves. *Experimental Mathematics*. 20.3 (2011). 329-357.
223. Stange, K. and Silverman, J. Terms in elliptic divisibility sequences divisible by their indices. *Acta Arithmetica*. 146.4 (2011) 355-378.
224. Stange, K., Balakrishnan, J., Belding, J., Chisholm, S., Eisentrager, K. and Teske, E. Pairings on hyperelliptic curves. *WIN - Women in Numbers: Research Directions in Number Theory, Fields Institute Communications*. 60 (2011) 87-120.
225. Stange, K. Elliptic nets and elliptic curves. *Algebra and Number Theory*. 5.2 (2011), 197-229.
226. Stange, K., Ingram, P., Mahe, V, Silverman, J. and Streng, M. Algebraic divisibility sequences over function fields. *arXiv*. 1105.5633 (2011).
227. Stange, K.E. Integral points on elliptic curves and explicit valuations of division polynomials. *arXiv*. 1108.3051 (2011).
228. Tania, N., Prosk, E., Condeelis, J. and Elderstein-Keshet, L. A temporal model of cofilin regulation and barbed end generation in invasive tumor cells. Submitted to *Biophys J*.
229. Tokman, C. and A. Quas. A semi-invertible operator Oseledets theorem. <http://front.math.ucdavis.edu/1105.5609>
230. Toloui, B., Gour, G. and Sanders, B. Constructing monotones for quantum phase references in totally dephasing channels. To appear in *Physical Review A*. 84 (2011), 8 pp.
231. Tu, X. and Adams, M. Image representation using triangle meshes with explicit discontinuities. *Proc. Of IEEE Pacific Rim Conf. on Communications, Computers and Signal Processing, Victoria, BC*. (2011): 97-101.
232. Tvalavadze, M. Universal enveloping algebras of simple symplectic anti-Jordan triple systems, submitted to *Alg. Colloq.*
233. Tvalavadze, M. V. and Bremner, M.R. Enveloping algebras of solvable Malcev algebras of dimension five. *Commun. Algebra*. 39 (2011), no.8, 2816-2837.
234. Uhlmann, G. and Salo, M. The attenuated ray trans-form on simple surfaces. To appear in *J. Diff. Geom.*
235. Uhlmann, G. and Stefanov, P. The geodesic X-ray transform with fold caustics. To appear in *Anal. And PDE*.
236. Uhlmann, G. and Stefanov, P. hermoacoustic tomography arising in brain imaging. *Inverse Problems*. 27 (2011), 045004.
237. Uhlmann, G., Bal, G., Ren, K. and Zhou, T. Quantitative Thermo-acoustics and related problems. *Inverse Problems*. 27 (2011), 055007
238. Uhlmann, G., Brytik, V., de Hoop, M. and Smith, H. The elastic wave equation of limited smoothness. To appear in *Commun. Partial Differential Equations*.
239. Uhlmann, G., Greenleaf, A., Kurylev, Y. and Lassas, M. Quantum and acoustic approximate cloaking. *Journal of Spectral Theory*. 1 (2011), 27-80.
240. Uhlmann, G., Imanuvilov, O. and Yamamoto, M. Inverse boundary problem with Cauchy data on disjoint sets. To appear in *Inverse Problems*.
241. Uhlmann, G., Imanuvilov, O. and Yamamoto, M. On determination of second order operators from partial Cauchy data. *Proc. Nat. Acad. Sci*. 108 (2011), 467-472.
242. Uhlmann, G., Kenig, C. and Salo, M. Inverse problems for the anisotropic Maxwell equations. *Duke Mathematical Journal*. 157 (2011), 369-419.
243. Uhlmann, G., Kenig, C. and Salo, M. Reconstruction from boundary measurements on admissible manifolds. To appear in *Inverse Problems and Imaging*.
244. Uhlmann, G., Krupchyk, K. and Lassas, M. Inverse problems for differential forms on Riemannian manifolds with boundary. To appear in *Commun. Partial Differential Equations*.
245. Uhlmann, G., Lassas, M. and Salo, M. Wave imaging. Chapter to appear in the *Handbook*

- of Mathematical Methods in Imaging*, Springer-Verlag.
246. Uhlmann, G., Liu C. and Wang, J. Asymptotic behavior of solutions of the stationary Navier-Stokes equation in a bounded domain. To appear in *Indiana Mathematical Journal*.
 247. Uhlmann, G., Lin, C., Nakamura, G. and Wang, J. Quantitative unique continuation for the Lamé system with less regular coefficients. *Methods and Applications of Analysis*. 18 (2011), 85-92.
 248. Uhlmann, G., Nagayasu, S. and Wang, J. Reconstruction of penetrable obstacles in acoustics. *SIAM Journal of Math. Analysis*. 43 (2011), 189-211.
 249. Uhlmann, G., Qian, J., Stefanov, P. and Zhao, H. An efficient Neumann-series based algorithm for thermoacoustic and photoacoustic tomography with a variable sound speed. To appear in *SIAM Journal on Imaging Sciences*.
 250. Wang, D., Dong, L. and Li, X. Towards shift tolerant visual secret sharing schemes. *IEEE Trans. Information Forensics and Security*. 6 (2011), no.2, 323-337.
 251. Wang, Y., Sanders, B., Bai, B. and Wang, X. Enhanced feedback iterative decoding of sparse quantum codes. To appear in *IEEE Trans. Information Theory*.
 252. Wang, D., Yi, F. and Li, X. Probabilistic visual secret sharing schemes for grey-scale images and color images. *Information Sciences*. 181 (2011), 2189-2208.
 253. Wei, T., Affleck, I. and Raussendorf, R. The 2D AKLT state is a universal quantum computational resource. *Phys. Rev. Lett.* 106 (2011), 070501.
 254. Wiebe, N., Berry, D., Hoyer, P. and Sanders, B. Simulating quantum dynamics on a quantum computer. To appear in *J. Physics A: Math. Gen.*
 255. Wilcox, S. and Yu, S. On the cellularity of the cyclotomic Birman-Murakami-Wenzl algebras. To appear in *J. London Math. Society, Second Series*.
 256. Wilcox, S. and Yu, S. The cyclotomic BMW algebra associated with the two string type B braid group. To appear in *Communications in Algebra*.
 257. Williams, J., Sulman, M. and Russell, R. Optimal mass transport for higher dimensional adaptive grid generation. To appear in *J. Computational Phys.* (2011).
 258. Williams, J., Sulman, M., Russell, R. and Beg, M. Volumetric image registration methods based on solving the Monge-Ampere equation. To appear in *Can. Appl. Math.*
 259. Wong, Y. and Li, G. Exact finite difference schemes for solving Helmholtz equation at any wavenumber. *Int. J. Num. Meth. Eng. Series B*, 2 (2011), no. 4, 91-108.
 260. Yilmaz, O., Powell, A., Tanner, J. and Wang, Y. Coarse quantization for random interleaved sampling of bandlimited signals. To appear in *ESAIM: Math. Modelling and Numerical Analysis*.
 261. Zhang, Y.A., Cao, L. and Wong, Y. Multiscale computations of 3D time-dependent Maxwell's equations in composite materials. *SIAM J. Scientific Computing*. 32 (2010), 2560-2583.
 262. Zwiers, I. and Simpson, G. Vortex Collapse of the L_2 -Critical Nonlinear Schrodinger Equation. *J. Math. Physics*. 52 (2011), no. 8.
 263. Zwiers, I. Standing Ring Blowup Solutions for Cubic NLS. To appear in *Analysis & PDE*.

In addition several of our conferences will lead to proceedings volumes, including:

- The volume *Computational and Analytical Mathematics*, to be part of the Springer series Springer Proceedings in Mathematics will focus on the mathematical research presented at *Computational and Analytical Mathematic* conference.
- The Canadian Applied Math Quarterly (CAMQ) will publish the proceedings of the *5th G. J. Butler Conference*.
- The proceedings of the AMP *Workshop on Reproducible Research* are slated to appear in the IEEE / AIP journal *Computing in Science and Engineering* in July 2012.