LIST OF PUBLICATIONS

CLAUS GERHARDT

[1] Robert Finn and Claus Gerhardt, *The internal sphere condition and the capillary problem*, Ann. Mat. Pura Appl., Ser. IV, **CXII** (1977), 13–31, pdf file.

[2] Claus Gerhardt, *Hypersurfaces of prescribed mean curvature over obstacles*, Math. Z. **133** (1973), 169–185, pdf file.

[3] _____, *Regularity of solutions of nonlinear variational inequalities*, Arch. Rat. Mech. Analysis **52** (1973), 389–393, pdf file.

[4] _____, *Existence and regularity of capillary surfaces*, Boll. Un. Mat. Ital. **10** (1974), 317–335, pdf file.

[5] _____, *Existence, regularity, and boundary behaviour of generalized surfaces of prescribed mean curvature*, Math. Z. **139** (1974), 173–198, pdf file.

[6] _____, *On the exterior capillarity problem*, Math. Z. **136** (1974), 345–349, pdf file.

[7] _____, *A note on the exterior capillarity problem*, Math. Z. **142** (1975), 203–204, pdf file.

[8] _____, *On the capillarity problem with constant volume*, Ann. Sc. Norm. Sup. Pisa, Ser. IV, **2** (1975), 303–320, pdf file.

[9] _____, *Regularity of solutions of nonlinear variational inequalities with a gradient bound as constraint*, Arch. Rat. Mech. Analysis **58** (1975), 309–315, pdf file.

[10] _____, *A further note on the exterior capillarity problem*, Math. Z. **150** (1976), 149–157, pdf file.

[11] _____, *Global regularity of the solutions to the capillarity problem*, Ann. Sc. Norm. Sup. Pisa, Ser. IV, **3** (1976), 157–175, http://www.numdam.org/item/ASNSP_1976_4_3_1_157_0.

[12] _____, *On the existence and uniqueness of a warpening function in the elastic-plastic torsion of a cylindrical bar with multiply connected cross-section*, Joint IUTAM/IMU Symposium in Applications of functional analysis to problems of mechanics, Lecture Notes in Mathematics, vol. 503, Springer Verlag, Berlin-Heidelberg-New-York, 1976, pdf file, pp. 328–342.

[13] _____, *On the regularity of solutions to variational problems in $BV(\Omega)$*, Math. Z. **149** (1976), 281–286, pdf file.

[14] _____, *L^p-estimates for solutions of the instationary Navier-Stokes equations in dimension two*, Pacific J. Math. **79** (1978), 375–398, pdf file.

[15] _____, *Boundary value problems for surfaces of prescribed mean curvature*, J. Math. Pure Appl. **58** (1979), 75–109, pdf file.

[16] _____, *Stationary solutions to the Navier-Stokes equation in dimension four*, Math. Z. **165** (1979), 165–197, pdf file.

[17] _____, *Evolutionary surfaces of prescribed mean curvature*, J. Diff. Eq. **36** (1980), 139–172, pdf file.

[18] _____, *A free boundary value problem for capillary surfaces*, Pacific J. Math. **88** (1980), 285–295, pdf file.

[19] _____, *H-surfaces in Lorentzian manifolds*, Commun. Math. Phys. **89** (1983), 523–553, doi:10.1007/BF01214742.

[20] _____, *Global $C^{1,1}$-regularity for solutions to quasi-linear variational inequalities*, Arch. Rat. Mech. Analysis **89** (1985), 83–92, doi:10.1007/BF00281746.

[21] _____, *Flow of nonconvex hypersurfaces into spheres*, J. Diff. Geom. **32** (1990), 299–314, pdf file, doi:10.4310/jdg/1214445048.

[22] _____, *Closed Weingarten hypersurfaces in Riemannian manifolds*, J. Diff. Geom. **43** (1996), 612–641, pdf file, doi:10.4310/jdg/1214460864.

[23] _____ , *Closed Weingarten hypersurfaces in space forms*, Geometric Analysis and the Calculus of Variations (Jürgen Jost, ed.), International Press, Boston, 1996, pdf file, pp. 71–98.

[24] _____ , *Hypersurfaces of prescribed Weingarten curvature*, Math. Z. **224** (1997), 167–194, pdf file.

[25] _____ , *Closed hypersurfaces of prescribed mean curvature in locally conformally flat Riemannian manifolds*, J. Diff. Geom. **48** (1998), 587–613, arXiv:math.DG/0409467.

[26] _____ , *Erratum "Hypersurfaces of prescribed Weingarten curvature"*, Math. Z. **233** (2000), 829–830, pdf file.

[27] _____ , *Hypersurfaces of prescribed curvature in Lorentzian manifolds*, Indiana Univ. Math. J. **49** (2000), 1125–1153, arXiv:math.DG/0409457.

[28] _____ , *Hypersurfaces of prescribed mean curvature in Lorentzian manifolds*, Math. Z. **235** (2000), 83–97, arXiv:math.DG/0409465.

[29] _____ , *Closed Weingarten hypersurfaces in semi-riemannian manifolds*, 2001, arXiv:math.DG/0207053, 25 pages.

[30] _____ , *Estimates for the volume of a Lorentzian manifold*, Gen. Relativity Gravitation **35** (2003), 201–207, doi:10.1023/A:1022336925552.

[31] _____ , *Hypersurfaces of prescribed scalar curvature in Lorentzian manifolds*, J. reine angew. Math. **554** (2003), 157–199, math.DG/0207054.

[32] _____ , *On the foliation of space-time by constant mean curvature hypersurfaces*, 2003, arXiv:math.DG/0304423, e-print, 7 pages.

[33] _____ , *Analysis I*, International Series in Analysis, International Press, Somerville, MA, 2004, 289 pp.

[34] _____ , *The inverse mean curvature flow in ARW spaces - transition from big crunch to big bang*, 2004, arXiv:math.DG/0403485, 39 pages.

[35] _____ , *Transition from big crunch to big bang in brane cosmology*, Adv. Theor. Math. Phys. **8** (2004), 319–343, gr-qc/0404061.

[36] _____ , *Analysis II*, International Series in Analysis, International Press, Somerville, MA, 2006.

[37] _____ , *Branes, moduli spaces and smooth transition from big crunch to big bang*, Adv. Theor. Math. Phys. **10** (2006), no. 3, 283–315, arXiv:hep-th/0409123.

[38] _____ , *Curvature Problems*, Series in Geometry and Topology, vol. 39, International Press, Somerville, MA, 2006.

[39] _____ , *The inverse mean curvature flow in Robertson-Walker spaces and its application to cosmology*, Methods Appl. Analysis **13** (2006), no. 1, 19–28, gr-qc/0404112.

[40] _____ , *The mass of a Lorentzian manifold*, Adv. Theor. Math. Phys. **10** (2006), 33–48, math.DG/0403002.

[41] _____ , *Minkowski type problems for convex hypersurfaces in hyperbolic space*, 2006, arXiv:math.DG/0602597, 32 pages.

[42] _____ , *On the CMC foliation of future ends of a spacetime*, Pacific J. Math. **226** (2006), no. 2, 297–308, math.DG/0408197.

[43] _____ , *Minkowski type problems for convex hypersurfaces in the sphere*, Pure and Applied Mathematics Quarterly **3** (2007), no. 2, 417–449, arXiv:math.DG/0509217, doi:10.4310/PAMQ.2007.v3.n2.a2, Leon Simon special issue, part I.

[44] _____ , *Curvature estimates for Weingarten hypersurfaces in Riemannian manifolds*, Adv. Calc. Var. **1** (2008), 123–132, arXiv:0704.1021, doi:10.1515/ACV.2008.004.

[45] _____ , *Curvature flows in semi-Riemannian manifolds*, Geometric Flows (Huai-Dong Cao and Shing-Tung Yau, eds.), Surveys in Differential Geometry, vol. XII, International Press of Boston, Somerville, MA, 2008, arXiv:0704.0236, pp. 113–165.

[46] _____ , *The inverse mean curvature flow in cosmological spacetimes*, Adv. Theor. Math. Phys. **12** (2008), 1183–1207, arXiv:math.DG/0403097.

[47] _____, *A general existence proof for non-linear elliptic equations in semi-Riemannian spaces*, Amer. J. Math. **131** (2009), no. 6, 1569–1588, arXiv:0709.3123, doi:10.1353/ajm.0.0078.

[48] _____, *Quantum cosmological Friedman models with a massive Yang-Mills field*, Class. Quantum Grav. **26** (2009), no. 13, 135013, arXiv:0903.1370, doi:10.1088/0264-9381/26/13/135013.

[49] _____, *Quantum cosmological Friedman models with an initial singularity*, Class. Quantum Grav. **26** (2009), no. 1, 015001, arXiv:0806.1769, doi:10.1088/0264-9381/26/1/015001.

[50] _____, *An energy gap for Yang-Mills connections*, Comm. Math. Phys. **298** (2010), 515–522, arXiv:0908.0767, doi:10.1007/s00220-010-1073-0.

[51] _____, *Combining gravity with the forces of the Standard Model on a cosmological scale*, Class. Quantum Grav. **27** (2010), no. 15, 155008, arXiv:1003.4246, doi:10.1088/0264-9381/27/15/155008.

[52] _____, *Curvature flows and CMC hypersurfaces*, Handbook of Geometric Analysis (Vol. III) (Lizhen Ji, Peter Li, Richard Schoen, and Leon Simon, eds.), Advanced Lectures in Mathematics, vol. 14, Higher Education Press and International Press, Beijing-Boston, 2010, arXiv:0806.1968, pp. 77–127.

[53] _____, *Quantum cosmological Friedman models with a Yang-Mills field and positive energy levels*, Class. Quantum Grav. **27** (2010), no. 3, 035007, arXiv:0907.5403, doi:10.1088/0264-9381/27/15/155008.

[54] _____, *Inverse curvature flows in hyperbolic space*, Journal Diff. Geom. **89** (2011), no. 3, 487–527, arXiv:1101.2578, doi:10.4310/jdg/1335207376.

[55] _____, *A unified quantum theory II: gravity interacting with Yang-Mills and spinor fields*, 2013, arXiv:1301.6101.

[56] _____, *The quantization of gravity in globally hyperbolic spacetimes*, Adv. Theor. Math. Phys. **17** (2013), no. 6, 1357–1391, arXiv:1205.1427, doi:10.4310/ATMP.2013.v17.n6.a5.

[57] _____, *A unified quantum theory I: gravity interacting with a Yang-Mills field*, Adv. Theor. Math. Phys. **18** (2014), no. 5, 1043–1062, arXiv:1207.0491, doi:10.4310/ATMP.2014.v18.n5.a2.

[58] _____, *Non-scale-invariant inverse curvature flows in Euclidean space*, Cal. Var. PDE **49** (2014), no. 1–2, 471–489, arXiv:1112.5626, doi:10.1007/s00526-012-0589-x.

[59] _____, *Curvature flows in the sphere*, J. Differential Geom. **100** (2015), no. 2, 301–347, arXiv:1308.1607, doi:10.4310/jdg/1430744123.

[60] _____, *Pinching estimates for dual flows in hyperbolic and de Sitter space*, (2015), arXiv:1510.03747.

[61] _____, *A unified field theory II: Gravity interacting with a Yang-Mills and Higgs field*, (2016), arXiv:1602.07191.

[62] _____, *Deriving a complete set of eigendistributions for a gravitational wave equation describing the quantized interaction of gravity with a Yang-Mills field in case the Cauchy hypersurface is non-compact*, (2016), arXiv:1605.03519.

[63] _____, *The quantization of a black hole*, (2016), arXiv:1608.08209.

[64] _____, *The quantum development of an asymptotically Euclidean Cauchy hypersurface*, (2016), arXiv:1612.03469.

[65] _____, *A partition function for Schwarzschild-AdS and Kerr-AdS black holes and for quantized globally hyperbolic spacetimes with a negative cosmological constant*, (2017), arXiv:1710.01164.

[66] _____, *Trace class estimates and applications*, (2017), pdf file.

[67] _____, *The quantization of a Kerr-AdS black hole*, Advances in Mathematical Physics **vol. 2018** (2018), Article ID 4328312, 10 pages, arXiv:1708.04611, doi:10.1155/2018/4328312.

[68] _____ , *The quantization of gravity*, Adv. Theor. Math. Phys. **22** (2018), no. 3, 709–757, arXiv:1501.01205, doi:10.4310/ATMP.2018.v22.n3.a4.

[69] _____ , *The Quantization of Gravity*, 1st ed., Fundamental Theories of Physics, vol. 194, Springer, Cham, 2018, doi:10.1007/978-3-319-77371-1.

[70] _____ , *Applications of canonical quantum gravity to cosmology*, Symmetrie **11** (2019), no. 8, 1005, arXiv:1908.02145, doi:10.3390/sym11081005.

[71] _____ , *CMC foliations of open spacetimes asymptotic to open Robertson-Walker spacetimes*, Pure and Applied Mathematics Quarterly **17** (2021), no. 1, 269–347, arXiv:1902.02853, doi:10.4310/PAMQ.2021.v17.n1.a8.

[72] _____ , *The quantization of gravity: Quantization of the Hamilton equations*, Universe **7** (2021), no. 4, 91, doi:10.3390/universe7040091.

[73] _____ , *A unified quantization of gravity and other fundamental forces of nature*, Universe **8** (2022), no. 8, 404, doi:10.3390/universe8080404.

[74] _____ , *A unified quantization of gravity and other fundamental forces of nature implies a big bang on the quantum level*, 2023, doi:10.13140/RG.2.2.11042.71361.

[75] _____ , *The quantization of gravity: The quantization of the full Einstein equations*, Symmetry **15** (2023), no. 8, 1599, doi:10.3390/sym15081599.

[76] _____ , *The Quantization of Gravity*, 2nd ed., Fundamental Theories of Physics, vol. 194, Springer, Cham, November 2024, doi:10.1007/978-3-031-67922-3.

[77] _____ , *Extending the solutions and the equations of quantum gravity past the big bang singularity*, Symmetry **17** (2025), no. 2, 262, doi:10.3390/sym17020262.

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