

List of Publications by Wolfgang Kühnel (as of April 2021)

1974 - 1983:

1. (with H.EHRIG)
Topological automata, R.A.I.R.O. **8**, 73–91 (1974), Zbl. 355.94064
2. (with H.EHRIG, K.D.KIERMEIER, H.-J.KREOWSKI)
Universal Theory of Automata, 240 S., Teubner-Verlag 1974, Zbl. 289.94023
3. (with H.EHRIG, M.PFENDER)
Diagram-characterization of recursion, Category Theory Applied to Computation and Control, Proceedings San Francisco 1974 (E.G. Manes, ed.), 137–143, Lecture Notes in Computer Science **25**, Springer-Verlag 1975, Zbl. 311.18001
4. (with J.MESEGUER, M.PFENDER, I.SOLS)
Primitive recursive algebraic theories with application to program-schemes, Cah. Top. Geom. Diff. **16**, 271–273 (1975), Zbl. 353.02016
5. *Ein Produktsatz für die zweite Totalkrümmung*, J. London Math. Soc. (2) **14**, 357–363 (1976), Zbl. 341.53036
6. (with J.MESEGUER, M.PFENDER, I.SOLS)
Primitive recursive algebraic theories and program schemes, Bull. Austr. Math. Soc. **17**, 207–233 (1977), Zbl. 354.18001
7. *Total curvature of manifolds with boundary in E^n* , J. London Math. Soc. (2) **15**, 173–182 (1977), Zbl. 343.53034
8. *$(n - 2)$ -tightness and curvature of submanifolds with boundary*, Intern. J. Math. and Math. Sci. **1**, 421–431 (1978), Zbl. 402.53035
9. *Total absolute curvature of polyhedral manifolds with boundary in E^n* , Geom. Dedicata **8**, 1–12 (1979), Zbl. 404.53048
10. *A lower bound for the i^{th} total absolute curvature of an immersion*, Colloq. Math. **41**, 253–255 (1979), Zbl. 451.53045
11. *Die totale mittlere Krümmung gewisser Hyperflächen im \mathbb{R}^5* , Monatsh. Math. **87**, 123–131 (1979), Zbl. 409.53003
12. (with H.EHRIG)
Categorical approach to nonlinear constant continuous-time systems, R.A.I.R.O. **13**, 107–133 (1979), Zbl. 417.93008
13. *Tight and 0-tight polyhedral embeddings of surfaces*, Inventiones mathematicae **58**, 161–177 (1980), Zbl. 432.53041

14. *0-tight surfaces with boundary and the total curvature of curves in surfaces*, Colloq. Math. **45**, 251–256 (1981), Zbl. 499.53047
15. (with U. BREHM)
Smooth approximation of polyhedral surfaces with respect to curvature measures, Global Differential Geometry and Global Analysis, Proceedings Berlin 1979 (D. Ferus et al., eds.), 64–68, Lecture Notes in Mathematics **838**, Springer-Verlag 1981, Zbl. 437.53040
16. *Zur inneren Krümmung der zweiten Grundform*, Monatsh. Math. **91**, 241–251 (1981), Zbl. 449.53043
17. (with J. MESEGUER, M. PFENDER, I. SOLS)
Algebras with actions and automata, Intern. J. Math. and Math. Sci. **5**, 61–85 (1982), Zbl. 469.18001
18. (with U. BREHM)
Smooth approximation of polyhedral surfaces regarding curvatures, Geom. Dedicata **12**, 435–461 (1982), Zbl. 483.53046
19. (with G. LASSMANN)
The unique 3-neighborly 4-manifold with few vertices, J. Comb. Th. (A) **35**, 173–184 (1983), Zbl. 526.52008
20. (with T.F. BANCHOFF)
The 9-vertex complex projective plane, The Math. Intelligencer vol. **5** issue 3, 11–22 (1983), Zbl. 534.51009

1984 - 1993:

21. (with G. LASSMANN)
The rhombidodecahedral tessellation of 3-space and a particular 15-vertex triangulation of the 3-dimensional torus, manuscripta mathematica **49**, 61–77 (1984), Zbl. 556.57016
22. (with U. PINKALL)
Tight smoothing of some polyhedral surfaces, Global Differential Geometry and Global Analysis, Proceedings Berlin 1984 (D. Ferus et al., eds.), 227–239, Lecture Notes in Mathematics **1156**, Springer-Verlag 1985, Zbl. 566.53054
23. (with G. LASSMANN)
Neighborly combinatorial 3-manifolds with dihedral automorphism group, Israel J. Math. **52**, 147–166 (1985), Zbl. 573.52010
24. *Higher dimensional analogues of Császár's torus*, Res. Math. **9**, 95–106 (1986), Zbl. 581.52008
25. (with U. BREHM)
A polyhedral model for Cartan's hypersurface in S^4 , Mathematika (London) **33**, 55–61 (1986), Zbl. 697.51015

26. (with U. PINKALL)
On total mean curvatures, Quart. J. Math. Oxford (2) **37**, 437–447 (1986), Zbl. 627.53044
27. *Minimal triangulations of Kummer varieties*, Abh. Math. Sem. Univ. Hamburg **57**, 7–20 (1987), Zbl. 637.52007
28. (with U. BREHM)
Combinatorial manifolds with few vertices, Topology **26**, 465–473 (1987), Zbl. 681.57009
29. (with G. LASSMANN)
Combinatorial d -tori with a large symmetry group, Discrete Comp. Geom. **3**, 169–176 (1988), Zbl. 634.52008
30. *Conformal transformations between Einstein spaces*, Conformal Geometry (Aspects of Mathematics E12; R. Kulkarni, U. Pinkall, eds.), 105–146, Vieweg-Verlag 1988, Zbl. 667.53039
31. *Triangulations of manifolds with few vertices*, Advances in Differential Geometry and Topology, (F. Tricerri, ed.), 59–114, Proc. of a workshop at the Institute for Scientific Interchange (Torino, Italy), World Scientific Publ. 1990, Zbl. 836.57002
32. (with CH. SCHULZ)
Submanifolds of the cube, Applied Geometry and Discrete Mathematics, The Victor Klee Festschrift (P. Gritzmann and B. Sturmfels, eds.), 423–432, DIMACS Ser. in Discr. Math. and Theor. Comp. Sci., Vol. 4, Amer. Math. Soc. 1991, Zbl. 752.52007
33. *On the inner curvature of the second fundamental form*, Proc. 3rd Congr. Geom. (N.K. Stephanidis, ed.), 248–253, Thessaloniki 1991, Zbl. 760.53002
34. *Hamiltonian surfaces in polytopes*, Proc. Conf. Intuitive Geometry, Szeged 1991 (K. Böröczky et al., eds.), 197–203, Coll. Math. Soc. J. Bolyai **63**, North-Holland, Amsterdam 1994, Zbl. 818.52009
35. (with U. BREHM)
15-vertex triangulations of an 8-manifold, Math. Annalen **294**, 167–193 (1992), Zbl. 757.57015
36. *Tightness, torsion, and tubes*, Ann. Global Analysis and Geometry **10**, 227–236 (1992), Zbl. 836.53038
37. (with T.F. BANCHOFF)
Equilibrium triangulations of the complex projective plane, Geom. Dedicata **44**, 313–333 (1992), Zbl. 769.52013

1994 - 2003:

38. (with H.-B. RADEMACHER)
Twistor spinors with zeros and conformal flatness, C. R. Acad. Sci. Paris **318**, 237–240 (1994), Zbl. 792.53042
39. *Manifolds in the skeletons of convex polytopes, tightness, and generalized Heawood inequalities*, Polytopes: Abstract, Convex and Computational, (T. Bisztriczky et al., eds.), 241–247, Proc. NATO Advanced Study Institute (ASI) Ser. C **440**, Kluwer 1994, Zbl. 811.52006
40. *Tensor products of spheres*, Geometry and Topology of Submanifolds, VI, (F. Dillen et al., eds.), 106–109, World Scientific Publ. 1994, Zbl. 837.53004
41. *Ruled W-surfaces*, Archiv der Mathematik **62**, 475–480 (1994), Zbl. 794.53008
42. (with H.-B. RADEMACHER)
Twistor spinors with zeros, Intern. J. Math. **5**, 877–895 (1994), Zbl. 818.53054
43. (with U. BREHM, E. SCHULTE)
Manifold structures on abstract regular polytopes, Aequationes mathematicae **49**, 12–35 (1995), Zbl. 817.51009
44. (with H.-B. RADEMACHER)
Oscillator and pendulum equation on pseudo-Riemannian manifolds, and conformal vector fields, Geometry and Topology of Submanifolds, VII (F. Dillen et al., eds.), 159–163, World Scientific Publ. 1995
45. *Tight polyhedral submanifolds and tight triangulations*, 122 Seiten, Lecture Notes in Mathematics **1612**, Springer-Verlag 1995, Zbl. 834.53004
46. (with H.-B. RADEMACHER)
Conformal diffeomorphisms preserving the Ricci tensor, Proc. Amer. Math. Soc. **123**, 2841–2848 (1995), Zbl. 851.53039
47. (with H.-B. RADEMACHER)
Essential conformal fields in pseudo-Riemannian geometry, J. Math. Pures et Appl. (9) **74**, 453–481 (1995), Zbl. 873.53047
48. *Centrally-symmetric tight surfaces and graph embeddings*, Beiträge zur Algebra und Geometrie **37**, 347–354 (1996), Zbl. 879.53045
49. (with G. LASSMANN)
Permuted difference cycles and triangulated sphere bundles, Discrete Math. **162**, 215–227 (1996), Zbl. 866.52011
50. (with M. BECKER)
Hypersurfaces with constant inner curvature of the second fundamental form, and the non-rigidity of the sphere, Math. Zeitschrift **223**, 693–708 (1996), Zbl. 869.53003

51. (with H.-B. RADEMACHER)
Twistor spinors and gravitational instantons, Lett. Math. Phys. **38**, 411–419 (1996), Zbl. 860.53029
52. (with H.-B. RADEMACHER)
Oscillator and pendulum equation on pseudo-Riemannian spaces, Tôhoku Math. J. **48**, 601–612 (1996), Zbl. 883.53051
53. (with H.-B. RADEMACHER)
Conformal completion of $U(n)$ -invariant Ricci-flat Kähler metrics at infinity, Zeitschr. Analysis Anw. (ZAA) **16**, 113–117 (1997), Zbl. 870.53040
54. (with P. BREUER)
The tightness of tubes, Forum Math. **9**, 707–720 (1997), Zbl. 885.53065
55. *Equilibrium decompositions of 4-manifolds, and abstract regular 5-polytopes*, Mathematika (London) **44**, 100–112 (1997), Zbl. 885.52013
56. (with H.-B. RADEMACHER)
Conformal vector fields on pseudo-Riemannian spaces, Differential Geom. Appl. **7**, 237–250 (1997), Zbl. 901.53048
57. (with H.-B. RADEMACHER)
Twistor spinors on conformally flat manifolds, Illinois J. Math. **41**, 495–503 (1997), Zbl. 881.53039
58. (with T.F. BANCHOFF)
Tight submanifolds, smooth and polyhedral, in: Tight and taut submanifolds (T.E. Cecil and S.-s. Chern, eds.), MSRI Publications Vol. **32**, 51–118, Cambridge University Press 1997, Zbl. 904.53003
59. (with T. E. CECIL)
Bibliography on tight, taut and isoparametric submanifolds, *ibid.* 307–339, Zbl. 904.53001
60. (with H.-B. RADEMACHER)
Essential conformal fields in pseudo-Riemannian geometry. II, J. Math. Sci. Univ. Tokyo **4**, 649–662 (1997), Zbl. 902.53046
61. (with G. LASSMANN)
Block designs $S_{2n-8}(2, 5, n)$ and triangulated Eulerian 4-manifolds, European J. Combin. **19**, 111–117 (1998), Zbl. 888.05006
62. *Topological aspects of twofold triple systems*, Expositiones Math. **16**, 289–331 (1998), Zbl. 918.05021
63. (with F. DILLEN)
Curvature of ruled Weingarten surfaces and groups of Lorentzian motions, Geometry and Topology of Submanifolds, IX (F. Defever et al., eds.), 135–138, World Scientific Publ. 1999

64. (with H.-B. RADEMACHER)
Conformal Killing fields on space-times, Current Topics in Mathematical Cosmology, Proc. Intern. Seminar Potsdam 1998 (M. Rainer and H.-J. Schmidt, eds.), 433–437, World Scientific Publ. 1998
65. (with H.-B. RADEMACHER)
Asymptotically Euclidean manifolds and twistor spinors, Commun. Math. Phys. **196**, 67–76 (1998), Corr. *ibid.* **207**, 735 (1999), Zbl. 929.53023
66. (with F. DILLEN)
Ruled Weingarten surfaces in Minkowski 3-space, manuscripta math. **98**, 307–320 (1999), Zbl. 942.53004
67. *Differentialgeometrie, Kurven - Flächen - Mannigfaltigkeiten*, 242 Seiten, Vieweg-Verlag 1999, Zbl. 931.53001, 2. Auflage 256 Seiten, 2003, Zbl.1049.53003, 3. Auflage 276 Seiten, 2005, 4. Auflage 280 Seiten, 2008, 5. Auflage 2010
68. (with F. H. LUTZ)
A census of tight triangulations, Periodica Math. Hung. **39**, 161–183 (1999), Zbl.996.52014
69. (with H.-B. RADEMACHER)
Asymptotically Euclidean ends of Ricci flat manifolds, and conformal inversions, Math. Nachrichten **219**, 125–134 (2000), Zbl.985.53031
70. (with M. CASELLA)
A triangulated K3 surface with the minimum number of vertices, Topology **40**, 753–772 (2001), Zbl.981.57011
71. (with F. DILLEN)
Total curvature for open submanifolds of Euclidean spaces, Proc. Conf. Diff. Geom. Sakado 2001 (Q.-M. Cheng, ed.), 139–147, Josai Math. Monogr. 3, Josai Univ., Sakado 2001
72. (with H.-B. RADEMACHER)
Conformal Ricci collineations of space-times, Gen. Relativity and Gravitation **33**, 1905–1914 (2001), Zbl.998.83011
73. *Differential Geometry, Curves – Surfaces – Manifolds*, translated by Bruce Hunt, AMS Student Mathematical Library Series Vol. **16**, American Math. Society 2002, Zbl.1009.53002, 2nd edition 2006

2004 - 2009:

74. *Tight embeddings of simply connected 4-manifolds*, Documenta Math. (electronic) **9**, 401–412 (2004), Zbl.1068.57024
75. (with H.-B. RADEMACHER)
Conformal geometry of gravitational plane waves, Geom. Dedicata **109**, 175–188 (2004), Zbl.1085.53018

76. (with F. DILLEN)
Total curvature of complete submanifolds of Euclidean space, Tôhoku Math. J. **57**, 171–200 (2005), Zbl.1087.53007
77. (with M. STELLER)
On closed Weingarten surfaces, Monatshefte f. Math. **146**, 113–126 (2005), Zbl.1093.53004
78. (with J. ITOH)
Tightness of graphs: Realizations with the Two-piece property, Rev. Roum. Math. Pures Appl. **51**, 1–19 (2006), Zbl.1113.05028
79. (with H.-B. RADEMACHER)
Liouville's theorem in conformal geometry, J. Math. Pures et Appl. (9) **88**, 251–260 (2007), Zbl.1127.53014
80. (with T.F. BANCHOFF)
Tight polyhedral models of isoparametric families, and PL-taut submanifolds, Advances in Geometry **7**, 613–629 (2007), Zbl.1134.52021
81. (with H.-B. RADEMACHER)
Conformal transformations of pseudo-Riemannian manifolds, in: Recent developments in pseudo-Riemannian geometry (D.Alekseevsky, H.Baum, eds.), ESI Lectures in Mathematics and Physics, 261–298, European Math. Society 2008, Zbl.1155.53037
82. (with U. BREHM)
Equivelar maps on the torus, European J. Combin. **29**, 1843–1861 (2008), Zbl.1160.52010
83. (with H.-B. RADEMACHER)
Einstein spaces with a conformal group, Results in Math. **56**, 421–444 (2009)
(Special issue dedicated to the memory of Katsumi Nomizu)

since 2010:

84. (with F. EFFENBERGER)
Hamiltonian submanifolds of regular polytopes, Discrete Comp. Geometry **43**, 242–262 (2010)
85. *Matrizen und Lie-Gruppen, eine geometrische Einführung*, 224 Seiten, Vieweg+Teubner Verlag 2011
86. (with G. SOLANES)
Tight surfaces with boundary, Bulletin London Math. Soc. **43**, 151–163 (2011)
87. (with J. SPREER)
Combinatorial properties of the K3 surface: Simplicial blowups and slicings, Experimental Math. **20**, 201–216 (2011)
88. (with E.W. GRAFAREND)
A minimal atlas for the rotation group $SO(3)$, Intern. J. Geomathematics **2**, 113–122 (2011)

89. (with U. BREHM)
Lattice triangulations of \mathbb{E}^3 and of the 3-torus, Israel J. Math. **189**, 97–133 (2012)
90. *Zur euklidischen Geometrie im akademischen Unterricht – Bekenntnisse eines mathematischen Banausen*, Math. Semesterberichte **60**, 105–121 (2013)
91. (with H.-B. RADEMACHER)
Conformally Einstein spaces revisited. Van der Veken, Joeri (ed.) et al., Pure and applied differential geometry, PADGE 2012. In memory of Franki Dillen. Proc. intern. Conf., Leuven, Belgium, August 27–30, 2012. Shaker-Verlag Aachen, 161–167 (2013).
92. (with H.-B. RADEMACHER)
Conformally Einstein product spaces, Diff. Geom. Appl. **49**, 65–96 (2016),
arXiv E-print: <https://arxiv.org/pdf/1607.03332.pdf>
93. (with U. BREHM)
Smallest polyhedral tilings of 3-tori by parallelehedra, Beiträge zur Algebra und Geometrie **62**, 83–100 (2021), DOI: 10.1007/s13366-020-00530-7

Extended Abstracts:

- (with H.-B. RADEMACHER)
Conformal geometry of gravitational plane waves, Oberwolfach Reports **1**, 2501–2503 (2004)
- *Discrete models of isoparametric hypersurfaces in spheres*, Oberwolfach Reports **3**, 665–667 (2006)
- *Lattice triangulations of 3-space, and PL curvature*, Oberwolfach Reports **6**, 113–115 (2009)

Preprints:

- (with R. GRUNERT, G. ROTE)
PL Morse theory in low dimensions (submitted)
- Pohl’s conjecture on tight surfaces in higher codimension (submitted)

Publications on High School mathematics and related topics:

1. (with H.P. KLEIN, TH. JAHNKE, TH. SONAR, M. SPINDLER)
Sind Hamburgs Abiturienten mathematisch und naturwissenschaftlich klüger geworden? Nach welchen Maßstäben übertrifft das achtjährige Gymnasium das neunjährige?, Vierteljahrschrift für wissenschaftliche Pädagogik **89/4**, 627–648 (2013)
2. (with TH. JAHNKE, H.P. KLEIN, TH. SONAR, M. SPINDLER)
Die Hamburger Abituraufgaben im Fach Mathematik – Entwicklung von 2005 bis 2013, Mitteilungen der DMV **22**, 115–121 (2014)

3. (with H.-J.BANDELT, TH.JAHNKE, H.P.KLEIN, D.REMUS, M.SCHWEIGHOFER, TH.SONAR, M.SPINDLER, S.WALCHER)
Zur neuen Schulmathematik im Abitur – die Bildungsstandards der KMK von 2012, Mitteilungen der DMV **23**, 106–109 (2015)
4. *Modellierungskompetenz und Problemlösekompetenz im Hamburger Zentralabitur zur Mathematik*, Math. Semesterberichte **62**, 79–82 (2015)
5. *Das Märchen von der voruniversitären Mathematik*, Pädagogische Korrespondenz **51**, 90–100 (2015)
6. (with H.-J.BANDELT)
Schöne neue Mathewelt, Mitteilungen der GDM **100**, 30–32 (2016)
7. (with H.-J.BANDELT)
Noch einmal schöne neue Mathewelt, Mitteilungen der GDM **102**, 16–18 (2017)
8. *Sprachkompetenz im Mathematikunterricht - Welche und wieviel Sprache braucht die Mathematik?* Profil, Heft 6 (Juni 2016), 22–24
9. (with S.WALCHER)
Die Lücke in Mathematik zwischen Schule und Hochschule. Anspruch und Wirklichkeit von Bildungsreformen, Mitteilungen der DMV **25**, 184–189 (2017)
10. (with D.REMUS, S.WALCHER)
Zu den KMK-Standards im Fach Mathematik: Exemplarische Analyse einer Beispielaufgabe für ein bundesweites Zentralabitur, Mitteilungen der GDM **104**, 21–27 (2018)
11. *Was Ganztagschulen bewirken. Werden Ganztagschulen mit dem StEG-Bericht schön-geredet?* Pädagogische Korrespondenz **57**, 74–86 (2018)
12. (with F.LEMMERMEYER, M.SPINDLER, H.P.KLEIN)
Zentralabitur 2019: Weitere Absenkung der mathematischen Anforderungen, Journal für Didaktik der Naturwissenschaften und der Mathematik **3**, 92–98 (2019)
13. (with F.LEMMERMEYER, M.SPINDLER, H.P.KLEIN)
Mathe-Abitur auf Irrwegen. Waren die Zentralabituraufgabenstellungen 2019 fachlich wirklich zu schwer? Eine kurze Analyse vorliegender Arbeiten aus den vornehmlich betroffenen Bundesländern, Profil (Juli–August 2019), 19–23