# KAWAUCHI, Akio's Paper List

149. Revised note on surface-link of trivial components. arXiv:2503.05151

148. Free ribbon lemma for surface-link. arXiv:2412.09281

147. Alternative proof of the ribbonness on classical link. arXiv:2501.00968

146. Classifying the surface-knot modules. arXiv:2408.04285

145. Ribbonness of a stable-ribbon surface-link, II: General case, (MDPI) Mathematics 13, 402 (2025), 1-11.

144. Note on surface-link of trivial components, Journal of Comprehensive Pure and Applied Mathematics, 2 (1) (2024), 1 - 05.

143. Another proof of free ribbon lemma, Journal of Mathematical Techniques and Computational Mathematics, 3(9) (2024), 01-03.

142. Introduction to knot theory and possibilities for mathematics education (in Japanese), Japan Journal of Mathematics Education and Related Fields, 65 No. 1・2 (2024), 1-13.

141. Whitehead aspherical conjecture via ribbon sphere-link, Journal of Mathematical Techniques and Computational Mathematics, 3(5) (2024), 01-10.

140. Kervaire conjecture on weight of group via fundamental group of ribbon sphere-link, Journal of Mathematical Techniques and Computational Mathematics, 3(4) (2024), 1-3.

139. Classical Poincaré conjecture via 4D topology, Journal of Mathematical Techniques and Computational Mathematics, 3(4) (2024), 1-7.

138. Ribbonness of Kervaire's sphere-link in homotopy 4-sphere and its consequences to 2-complexes, Journal of Mathematical Techniques and Computational Mathematics, 3(4) (2024), 01-08.

137. Smooth homotopy 4-sphere, WSEAS Transactions on Mathematics 22 (2023), 690-701.

136. Ribbonness on classical link, J Math Techniques Comput Math, 2(8) (2023), 375-377.

135. Triviality of a surface-link with meridian-based free fundamental group, Transnational Journal of Mathematical Analysis and Applications 11 (2023), 19-27.

134. Uniqueness of an orthogonal 2-handle pair on a surface-link, Contemporary Mathematics (UWP) 4 (2023), 182-188.

133. Unique diagram of a spatial arc and the knotting probability, Pure and Applied Mathematics 11 (2022), 102-111.

132. (with Valeriy Bardakov) Spatial graph as connected sum of a planar graph and a braid, J. Knot Theory Ramifications 30 (11) (2021) 2150077 (15 pages).

131. Mathematical mirror image and knot - Understanding chiral knot objects (in Japanese), SUURIKAGAKU, No. 693 (March 2021), 59-65,SAIENSU-SHA Co. Ltd.

130. Smooth homotopy 4-sphere (research announcement), 2191 Intelligence of Low Dimensional Topology, RIMS Kokyuroku 2191 (July 2021), 1-13.

129. (with María de los Angeles Guevara Hernández) On alternating closed braids, J. Knot Theory Ramifications, 30 (3) (2021) 2150017 (14 pages).

128. Ribbonness of a stable-ribbon surface-link, I. A stably trivial surface-link, Topology and its Applications 301(2021), 107522 (16pages). arxiv:1804.02654.pdf

127. Knotting probability of an arc diagram, Journal of Knot Theory and Its Ramifications 29 (10) (2020) 2042004 (22 pages).

126. (with A. Shimizu and Y. Yaguchi) Cross-index of a graph, Kyungpook Math. J. 59 (2019), 797-820.

125. Topology of a 4D universe for every 3-manifold, Topology and its Applications 264 (2019), 66-78.

124. (with J. Kim) Immersed 2-knots with essential singularity, Topology and its Applications 264 (2019), 462-472.

123. Homological infinity of 4D universe for every 3-manifold, in: Algebraic Topology and Related Topics (2019), 153-176, Birkhäuser.

122. Poincaré Conjecture (in Japanese), SUUGAKU SENINAR, vol. 57 (9)_684 (September 2018) 23-29, NIPPON HYORON SHA CO. LTD.

121. (with K. Kauer, S. Kamada and M. Prabhacker) An unknotting index for virtual knots, Tokyo Journal of Mathematics, Advance publication (2018), 14 pages.

120. Faithful equivalence of equivalent ribbon surface-links, Journal of Knot Theory and Its Ramifications, 27, No. 11 (2018),1843003 (23 pages).

119. (with S. Kamada, J. Kim, and S. Y. Lee) Biquandle cohomology and state sum invariants of links and surface-links, Journal of Knot Theory and Its Ramifications, 27, No. 11 (2018), 1843016 (37 pages).

118. Complexities of a knitting pattern, Reactive and Functional Polymers, 131 (2018), 230 -236.

117. (with S. Kamada, J. Kim, and S.Y. Lee) Presentation of immersed surface-links by marked graph diagrams, J. Knot Theory Ramifications 27 (2018), No. 10, 1850052 (10 pages).

116. (with A. Shimizu) On the orientations of monotone knot diagrams, Journal of Knot Theory and Its Ramifications, 26, No. 10 (2017), 1750053 (15 pages).

115. (with Y. Joung, S. Kamada and S. Lee) Polynomial of an oriented surface-link diagram via A_2 invariant, Topology and its Applications, 231 (2017), 159-185.

114. (with I. Tayama) Representing 3-manifolds in the complex number plane, Topology and its Applications, 230C (2017), 425-443.

113. On a cross-section of an immersed sphere-link in 4-space, Topology and its Applications,

230C (2017), 194-217.
112. (with K. Kaur, S. Kamada and M. Prabhakar) Gauss diagrams, unknotting numbers and trivializing numbers of spatial graphs, Topology and its Applications, 230 (2017), 586-598.
111. A chord graph constructed from a ribbon surface-link, Contemporary Mathematics, 689 (2017), 125-136. Amer. Math. Soc., Providence, RI, USA.
110. Knots in Mathematics (in Japanese), in: Chapter one of: Introduction to Mathematical Education on Knots- for primary school children, junior high students, and the high school students, No. 5 (ed. A. Kawauchi and T. Yanagimoto) (March 2017), 1-7.
109. Supplement to a chord diagram of a ribbon surface-link, Journal of Knot Theory and Its Ramifications 26 (2017), 1750033 (5 pages).
108. Knot theory for spatial graphs attached to a surface, Proceedings of the ICTS Program: Knot Theory and its Applications, Contemporary Mathematics 670 (2016), 141-168.
107. Theory of Knots (Monograph in Japanese), Kyoritsu Shuppan Co. Ltd (2015).
106. (with Y. Bae and S. Choi) On knotted real projective planes, Journal of Knot Theory and Its Ramifications, 24 (2015), 1540011 (15 pages).
105. A chord diagram of a ribbon surface-link, Journal of Knot Theory and Its Ramifications, 24 (2015), 1540002 (24 pages).
104. Characteristic genera of closed orientable 3-manifolds, Kyungpook Math. J., 55 (2015), 753-771.
103. On 4-dimensinal universe for every 3-dimensional manifold, Topology and its Applications, 196 (2015), 575-593.
102. (with I. Tayama and B. Burton) Tabulation of 3-manifolds of lengths up to 10, Topology and its Applications, 196 (2015), 937-975.
101. (with A. Shimizu) Quantization of the crossing number of a knot diagram, Kyungpook Math. J., 55 (2015), 741-752.
100. (with A. Shimizu and K. Kishimoto) A game using knot theory, Japanese Patent Registration Number 5804412 (September 11, 2015).
99. Topology associated with various fields of mathematics(in Japanese), in: Japanese Monthly Magazine "Mathematical Sciences", 11 (2014), 7-12.
98. The Alexander polynomials of immersed concordant links, Boletin de la Sociedad Matematica Mexicana, 20 (2014) 559-578. DOI: 10.1007/s40590-014-0023-9.
97. Splitting a 4-manifold with infinite cyclic fundamental group, revised in a definite case. Journal of Knot Theory and Its Ramifications, 23 (2014) 1450029 (6pages).
96.Component-conservative invertibility of links and Samsara 4-manifolds on 3-manifolds,Asia Pacific Journal of Mathematics, 1 (2014), 86-106.

95. Knot theory game "Region Select" (in Japanese), in: On a trial of early childhood education by a knot, Introduction to Mathematical Education on Knots-for primary school children, junior high school students, high school students and university students, No. 4, pp.1-8, (A. Kawauchi and T. Yanagimoto ed.) (2014).

94. Splitting a 4-manifold with infinite cyclic fundamental group, revised, Journal of Knot Theory and Its Ramifications, 22, No. 14 (2013) 1350081 (9 pages).

93. (with K. Kishimoto and A. Shimizu) Knot Theory and Game (a monograph in Japanese), Asakura Publishing Co., Ltd. (2013).

92. On mathematics education of knots (in Japanese), Osaka Journal of Mathematics Education, Memorial edition to Professor Hirokazu Okamori, 42 (2013), 141-146.

91.(with K. Yoshida) Topology of prion proteins, Journal of Mathematics and System Science, 2 (2012), 237-248.

90. On the Alexander polynomials of knots with Gordian distance one, Topology and its Applications, 159 (2012), 948-958.

89. Mind-knots and mind-relations: knot theory applied to psychology, Chapter 7 in: Qualitative Mathematics for the Social Sciences, Mathematical Models for Research on Cultural Dynamics (L. Rudolph ed.), Routledge's Cultural Dynamics of Social Representation series (Jaan Valsiner, series ed.) (2012), 227-253.

88. What is Knot Theory ? Why Is It In Mathematics ?, in: Teaching and Learning of Knot Theory in School Mathematics (A. Kawauchi and T. Yanagimoto ed.), OCAMI Studies, 4(2011), 1-15, Osaka Municipal Univ. Press; (2012), 1-15, Springer Verlag.

87. (with T. Kadokami) Amphicheirality of links and Alexander invariants, SCIENCE CHINA Mathematics 54 (2011), 2213-2227.

86. On transforming a spatial graph into a plane graph, in: Statistical Physics and Topology of Polymers with Ramifications to Structure and Function of DNA and Proteins, Progress of Theoretical Physics Supplement, No. 191(2011), 235-244.

85. (with I. Tayama) Enumerating 3-manifolds with lengths up to 9 by a canonical order, Topology Appl. 157(2010), 261-268 .

84. On alternation numbers of links, Topology Appl. 157(2010),274-279.

83. Applying knot theory to sciences - mainly on knot models of a prion protein and a psychological mind(in Japanese), a civic lecture record, Sugaku Tushin, 14-4(February, 2010), 26-45.

82. Basics on topology (in Japanese), in: Topology Designing-Material / Materials Design Beginning With New Geometry, NTS, Inc. (2009), 127-140.

81. (with I. Tayama) Enumerating homology spheres with lengths up to 10 by a canonical order, Proceedings of Intelligence of Low-Dimensional Topology 2009 in honor of Professor Kunio

Murasugi's 80th birthday, (2009), 83-92.

80. Topology of spatial graphs, in: Proceedings of Yamada Conference 2008 "Topological Molecules" (2008).

79. Defining the absolute value of the linking number of a link without concept of a negative number (in Japanese), in: Introduction to Mathematical Education on Knots- for primary schoolchildren, junior high students, and the high school students, No. 3 (A. Kawauchi and T. Yanagimoto ed.) (2009), 13-21.

78. On a complexity of a spatial graph. in: Knots and soft-matter physics, Topology of polymers and related topics in physics, mathematics and biology, Bussei Kenkyu 92-1 (2009-4), 16-19.

77. Rational-slice knots via strongly negative-amphicheiral knots, Communications in Mathematical Research 25 (2009), 177-192.

76. The first Alexander Z[Z]-modules of surface-links and of virtual links, Heiner ZieschangGedenkschrift, Geometry & Topology Monographs 14 (2008), 353-371.

75.(I. Tayama) Enumerating prime link exteriors with lengths up to 10 by a canonical order,Proceedings of the joint conference of Intelligence of Low Dimensional Topology 2008 and the Extended KOOK Seminar, (2008), 135-143.

74. Lectures on knot theory (a monograph in Japanese), Kyoritsu Shuppan Co. Ltd (2007).

73. (with I. Tayama) Enumerating 3-manifolds by a canonical order, Intelligence of low dimensional topology 2006, Series on knots and everything,World Sci. publ. 40 (2007), 165-172.

72. On the surface-link groups, Intelligence of low dimensional topology 2006,Series on knots and everything, World Sci. publ. 40 (2007), 157-164.

71. A knot model in psychology, in: Knot Theory for Scientific Objects, OCAMI Studies 1 (2007), 129-141.

70. Topological imitations and Reni-Meccia-Zimmermann's conjecture, Kyungpook Math. J., 46 (2006), 1-9.

69. (with I. Tayama) Enumerating prime links by a canonical order, Journal of Knot Theory and Its Ramifications, 15 (2006), 217-237.

68. Characterizing the first Alexander Z[Z]-modules of surface-links and of virtual links, in: Proc. Second East Asian School of Knots, Links, and Related Topics in Geometric Topology (Darlian, Aug. 2005), 111-121.

67. (with I. Tayama) Enumerating the exteriors of prime links by a canonical order, in: Proc. Second East Asian School of Knots, Links, and Related Topics in Geometric Topology (Darlian, Aug. 2005), 269-277.

66. Topological imitation of a colored link with the same Dehn surgery manifold, Proc. of International Conf. Topology in Matsue 2002, Topology Appl. 146-147 (2005), 67-82.

65. (with I. Tayama) Enumerating the prime knots and links by a canonical order, Proc. 1st East Asian School of Knots, Links, and Related Topics, 2004 (Seoul, Feb. 2004), (2004), 307-316.

64. A tabulation of 3-manifolds via Dehn surgery, Boletin de la Sociedad Matematica Mexicana (3) 10 (2004), 279-304.

63. Link corresponding to 3-manifold, in: Proc. of Professor Kazuaki Kobayashi and Professor Shin'ichi Suzuki's Joint 60th Birthday Symposium"The Present, Past and Future's Knot Theory" (2002), 130-154.

62. On pseudo-ribbon surface-links, J. Knot Theory Ramifications,11 (2002), 1043-1062.

61. On linking signature invariants of surface-knots, J. Knot Theory Ramifications 11 (2002), 369-385.

60. An intrinsic Arf invariant of a link and its surface-link analogue, in: Proc. of the first topology meeting of Japan-Mexico 1999, Topology Appl. 121 (2002), 255-274.

59. (with S. Kamada and T. Matumoto) Combinatorial moves on ambient isotopic submanifolds in a manifold, J. Math. Soc. Japan, 53(2001), 321-331.

58. From linear algebra to homology (a monograph in Japanese), Baifukan Tokyo (2000).

57.Algebraic characterization of an exact 4-manifold with infinite cyclic first homology, Journal Atti Sem. Mat. Fis. Univ. Modena 48 (2000), 405-424.

56.Torsion linking forms on surface-knots and exact 4-manifolds, in: Knots in Hellas '98, Series on Knots and Everything, World Sci. Publ. 24 (2000), 208-228.

55.The quadratic form of a link, in: Proc. Low Dimension Topology, Contemp. Math. 233 (1999),97-116.

54. On the fundamental class of an infinite cyclic covering, Kobe J. Math. 15 (1998),103-114.

53.Floer homology of topological imitations of homology 3-spheres, J. Knot Theory Ramifications 7 (1998),41-60.

52. Osaka City University Internet Lectures on knot theory (in Japanese, 1997).

51.The quadratic form of a link and a Seifert matrix, in: The 5th Korea-Japan School of Knots and Links, Proc. Applied Math.Workshop 8, KAIST, Korea (1997), 119-129.

50. Topological imitations, in: Lectures at Knots 96, World Scientific Publ. (1997) 19-37.

49. A survey of knot theory, Birkhäuser Verlag (1996).

48. Distance between links by zero-linking twists, Kobe J. Math.13 (1996), 183-190.

47. Mutative hyperbolic homology 3-spheres with the same Floer homology, Geometriae Dedicata 61 (1996), 205-217.

46. (with J. A. Hillman) Unknotting orientable surfaces in the 4-sphere, J. Knot Theory Ramifications 4 (1995),213-224.

45. Topological imitation, mutation and the quantum SU(2) invariants, J. Knot Theory Ramifications 3 (1994), 25-39.

44. A survey of topological imitations of (3,1)-dimensional manifold pairs, Proc. Applied Math. Workshop 4 (1994), 43-52.

43. On coefficient polynomials of the skein polynomial of an oriented link, Kobe J. Math. 11 (1994), 49-68.

42. Splitting a 4-manifold with infinite cyclic fundamental group,Osaka J. Math. 31 (1994), 489-495.

41. Introduction to almost identical imitations of (3,1)-dimensional manifold pairs, in:Topics in Knot Theory, Proceedings of NATO-ASI Topics in Knot Theory(Eruzurum /Turkey), Kluwer Academic Publishers, (1993), 69-83.

40. Almost identical imitations of (3,1)-dimensional manifold pairs and the manifold mutation, J. Austral. Math. Soc., Ser. A 55 (1993), 100-115.

39. Almost identical imitations of (3,1)-dimensional manifold pairs and the branched coverings, Osaka J. Math. 29 (1992), 299-327.

38. Almost identical link imitations and the skein polynomial, in: Knots 90, Walter de Gruyter, Berlin-New York (1992), 465-476.

37. The first Alexander modules of surfaces in 4-sphere, in: Algebra and Topology, Proc. KAIST Math. Workshop 5 (1990), 81-89.

36. Almost identical imitations of (3,1)-dimensional manifold pairs, Osaka J. Math. 26 (1989), 743-758.

35. An imitation theory of manifolds, Osaka J. Math. 26 (1989), 447-464.

34. Imitations of (3,1)-dimensional manifold pairs, Sugaku 40 (1988), 193-204 (in Japanese); Sugaku Expositions 2 (1989), 141-156 (published from Amer. Math. Soc. in English).

33. The imbedding problem of 3-manifolds into 4-manifolds, Osaka J. Math. 25 (1988), 171-183.

32. Knots in the stable 4-space; An overview, A Fete of Topology, Academic Press (1988), 453-470.

31. On the integral homology of infinite cyclic coverings of links, Kobe J. Math. 4 (1987), 31-41.

30. Three dualities on the integral homology of infinite cyclic coverings of manifolds, Osaka J. Math. 23 (1986), 633-651.

29. On the signature invariants of infinite cyclic coverings of even dimensional manifolds, Homotopy Theory and Related Topics, Advanced Studies in Pure Math. 9 (1986), 177-188.

28. On the signature invariants of infinite cyclic coverings of closed odd dimensional manifolds, Algebraic and Topological Theories-to the memory of Dr. T. Miyata, Kinokuniya Co. Ltd. (1985), 52-85.

27. Classification of pretzel knots, Kobe J. Math. 2 (1985), 11-22.

26. (with F. Hosokawa,Y. Nakanishi,and M. Sakuma) Note on critical points of surfaces in 4-space, Kobe J. Math. 1 (1984), 151-152.

25. (with T.Kobayashi and M.Sakuma) On 3-manifolds with no periodic maps, Japan. J. Math. 10 (1984), 185-193.

24. Rochlin invariant and α-invariant, Four-Manifold Theory, Contemp. Math. 35 (1984), 315-326.

23. On the Robertello invariants of proper links, Osaka J. Math. 21 (1984), 81-90.

22. (with T.Shibuya and S.Suzuki Descriptions on surfaces in four-space, II: Singularities and cross-sectional links, Math. Sem. Notes, Kobe Univ. 11 (1983), 31-69.

21. (with H.Murakami and K.Sugishita) On the T-genus of knot cobordism, Proc. Japan Acad. 59 (1983), 91-93.

20. A test for the fundamental group of a 3-manifold, J. Pure Appli. Algebra, 28 (1983), 189-196.

19. On the Rochlin invariants of Z_2 -homology 3-spheres with cyclic actions, Japan. J. Math. 8 (1982), 217-258.

18. (with T.Shibuya and S.Suzuki) Descriptions on surfaces in four-space, I : Normal forms, Math. Sem. Notes, Kobe Univ. 10 (1982), 75-125.

17. On 3-manifolds admitting orientation-reversing involutions, J. Math. Soc. Japan 33 (1981), 571-589.

16. The (2,1)-cable of the figure eight knot is rationally slice (in a handwritten manuscript) (1980).

15. (with S.Kojima) Algebraic classification of linking pairings on 3-manifolds, Math. Ann. 253 (1980), 29-42.

14. (with T. Matumoto) An estimate of the homology torsion modules of infinite cyclic coverings and knot theory, Pacific J. Math. 90 (1980), 99-103.

13. On links not cobordant to split links, Topology 19 (1980), 321-334.

12. On a 4-manifold homology equivalent to a bouquet of surfaces, Trans. Amer. Math. Soc. 262 (1980), 95-112.

11. Vanishing of the Rochlin invariants of some Z_2 -homology 3-spheres, Proc. Amer. Math. Soc. 79 (1980), 303-307.

10. The invertibility problem on amphicheiral excellent knots, Proc. Japan Acad. 55 (1979), 399-402.

9. (with R. Hartley) Polynomials of amphicheiral knots, Math. Ann. 243 (1979), 63-70.

8. On n-manifolds whose punctured manifolds are imbeddable in (n+1)-sphere and spherical manifolds, Hiroshima Math. J. 9 (1979), 47-57.

7. (with F. Hosokawa) Proposals for unknotted surfaces in four-space. Osaka J. Math. 16 (1979),

233-248.
6. On the Alexander polynomials of cobordant links, Osaka J. Math. 15 (1978), 151-159.
5. On quadratic forms of 3-manifolds, Invent. Math. 43 (1977),177-198.
4. H˜-cobordism , I, Osaka J. Math. 13 (1976),567-590.
3.Three dimensional homology handles and circles, Osaka J. Math. 12 (1975),565-581.
2. A partial Poincare duality theorem for infinite cyclic coverings,Quart. J. Math. 26 (1975),437-458.
1. A classification of compact 3-manifolds with infinite cyclic fundamental groups, Proc. Japan Acad. 50 (1974),175-178.