

References

- [1] E. Artin. Theory of braids. *Annals of Mathematics* (2) 48 (1947), 101-126.
- [2] D. Bar-Natan. On the Vassiliev knot invariants. *Topology* 34 (1995) no. 2, 423-472.
- [3] D. Bar-Natan. Vassiliev homotopy string link invariants. *Journal of Knot Theory and its Ramifications* 4 (1995) no. 1, 13-32.
- [4] D. Bar-Natan. On Khovanov's categorification of the Jones polynomial. *Alg. Geom. Top.*, 2:337-370, 2002.
- [5] J. S. Birman and W. W. Menasco. Studying links via closed braids III: classifying links which are closed 3-braids. *Pacific Journal of Mathematics* 161 (1993) no. 1, 25-113.
- [6] J.S. Birman. *Braids, Links and Mapping Class Groups*. *Annals of Mathematics Studies* 82. Princeton University Press, 1975.
- [7] J. S. Birman. New points of view in knot theory. *Bulletin of the American Mathematical Society* 28 (1993) no. 2, 253-287.
- [8] J. S. Carter and M. Saito. Reidemeister moves for surface isotopies and their interpretation as moves to movies. *J. Knot Theory Ramifications*, 2:251-284, 1993.
- [9] A. Casson and C. McA. Gordon. On slice knots dimension three. *Algebraic and geometric topology (Proc. Sympos. Pure Math., Stanford Univ., Stanford, Calif., 1976)*, Part 2, 39-53 *Proc. Sympos. Pure Math., XXXII, Amer. Math. Soc., Providence, R.I., 1978*.
- [10] A. Casson and C. McA. Gordon. Cobordism of classical knots. *A la recherche de la Topologie perdue*, ed. by Guillou and Marin, *Progress in Mathematics*, Volume 62, 1986. (Originally published as Orsay Preprint, 1975.)
- [11] T. Cochran. Derivatives of links: Milnor's concordance invariants and Massey's products. *Memoirs A.M.S.* 84 no. 427 (1990).
- [12] T. Cochran, K. Orr, and P. Teichner. Structure in the classical knot concordance group. To appear, *Comment. Math. Helv.* arxiv.org/math.GT/0206059.
- [13] T. Cochran, K. Orr, and P. Teichner. Knot concordance, Whitney towers and L2 signatures. *Annals of Math.* 157 (2003), 433-519.
- [14] F.R. Cohen. On Braids, Representations, and Homotopy Theory. unpublished manuscript.
- [15] J. Conant, P. Teichner. Grope cobordism of classical knots, *Topology* 43 (2004) 119-156.
- [16] J. Conant. On a theorem of Goussarov. math.GT/0110057, to appear in *J. of Knot Theory and its Ramifications*.
- [17] D. Cooper. Detecting knots that are not slice. Thesis, Warwick University, 1982.
- [18] D. Coray and F. Michel. Knot cobordism and amphicheirality. *Comment. Math. Helv.* 58 (1983), 601-616.
- [19] M. Falk and R. Randell. Pure braid groups and products of free groups. *Braids* (Santa Cruz, CA, 1986), 217-228, *Contemporary Mathematics* 78, American Mathematical Society, 1988.

- [20] R. Fox. A quick trip through knot theory. *Topology of 3-Manifolds* ed. by M. K. Fort, Prentice Hall (1962), 120-167.
- [21] R. Fox and J. Milnor. Singularities of 2-spheres in 4-space and cobordism of knots. *Osaka J. Math.* 3 (1966), 257-267.
- [22] M. Freedman and F. Quinn. *The topology of 4-manifolds.* Princeton Math. Series 39, Princeton, NJ, 1990.
- [23] S. Garoufalidas, M. Goussarov and M. Polyak. Calculus of clovers and finite type invariants of 3-manifolds. *Geometry and Topology* 5, 75-108 (2001).
- [24] S. Garoufalidis and J. Levine. Finite-type 3-manifold invariants, the mapping class group and blinks. *Journal of Differential Geometry* 47 (1997) no. 2, 257-320.
- [25] S. Garoufalidis and L. Rozansky. The loop expansion of the Kontsevich integral, abelian invariants of knots and S-equivalence. math.GT/0003187, to appear in *Topology*.
- [26] C. Giffen. Link concordance implies link homotopy. *Math. Scand.* 45 (1979) 243-254.
- [27] P. Gilmer and C. Livingston. The Casson-Gordon invariant and link concordance. *Topology* 31 (1992), 475-492.
- [28] P. Gilmer. On the slice genus of knots. *Invent. Math.* 66 (1982), 191-197.
- [29] P. Gilmer. Slice knots in S^3 . *Quart. J. Math. Oxford Ser. (2)* 34 (1983), 305-322.
- [30] P. Gilmer. Classical knot and link concordance. *Comment. Math. Helv.* 68 (1993), 1-19.
- [31] D. Goldsmith. Concordance implies homotopy for classical links in S^3 . *Comment. Math. Helv.* 54 (1979) 347-355
- [32] R. Gompf. Smooth concordance of topologically slice knots. *Topology* 25 (1986), 353-373.
- [33] M. Goussarov (Gusarov), On n-equivalence of knots and invariants of finite degree, *Topology of Manifolds and Varieties, Adv. Sov. Math., vo. 18, A.M.S., 173-192 (1994).*
- [34] G.G. Gurzo. The group of smooth braids. 16th All-Union Algebra Conference, Abstract II, 39-40, Leningrad 1981.
- [35] N. Habegger and G. Masbaum. The Kontsevich integral and Milnor's invariants. *Topology* 39, 1253-1289 (2000).
- [36] N. Habegger and X.-S Lin. The Classification of Links up to Link-homotopy. *Journal of the American Mathematical Society* volume 3 (1990), pp. 389 - 419.
- [37] K. Habiro. Claspers and the Vassiliev skein modules. preprint, University of Tokyo (1999)
- [38] K. Habiro. Claspers and finite type invariants of links. *Geometry and Topology* 4, 1-83 (2000).
- [39] A. Hatcher, W. Thurston, A presentation for the mapping class group of a closed orientable surface, *Topology* 19 (1980) 221-237.
- [40] J. R. Hughes. Structured Groups and Link-Homotopy. *Journal of Knot Theory and Its Ramifications* 2 (1993) .

- [41] J. R. Hughes. Distinguishing Link-homotopy Classes by Pre-peripheral Structures. *Journal of Knot Theory and Its Ramifications* 7 (1998).
- [42] J. R. Hughes. Finite Type Link Homotopy Invariants of k -trivial Links. *Journal of Knot Theory and Its Ramifications* 12 (2003).
- [43] M. Jacobsson. An invariant of link cobordisms from Khovanov's homology theory. *math.GT/0206303*, 2002.
- [44] D. Johnson, An abelian quotient of the mapping class group, *Math. Ann.* 249 (1980) 225-242.
- [45] D.L. Johnson. Presentations of Groups. *LMS Student Texts* 15, 1990.
- [46] D.L. Johnson. Towards a characterization of smooth braids. *Mathematical Proceedings of the Cambridge Philosophical Society* 92 (1982) 425-427.
- [47] E. Kalfagianni and X.-S. Lin. Regular Seifert surfaces and Vassiliev knot invariants, preprint *GT/9804032* available from front.math.ucdavis.edu
- [48] M. Kervaire. Knot cobordism in codimension two. *Manifolds-Amsterdam 1970 (Proc. Nuffic Summer School)* 83-105 *Lecture Notes in Mathematics*, Vol. 197 Springer, Berlin (1971).
- [49] M. Khovanov. A categorification of the Jones polynomial. *Duke Math. J.*, 101:359-426, 2000.
- [50] T. Kim. Filtration of the classical knot concordance group and Casson-Gordon invariants. Preprint 2002. arxiv.org/math.GT/0207221.
- [51] T. Kim. Obstructions to slicing and doubly slicing knots. Thesis, Indiana University, 2003.
- [52] R. Kirby. Problems in low-dimensional topology. Edited by Rob Kirby. *AMS/IP Stud. Adv. Math.*, 2.2, Geometric topology (Athens, GA, 1993), 35-473, Amer. Math. Soc., Providence, RI, 1997.
- [53] R. Kirby and W. B. R. Lickorish. Prime knots and concordance. *Math. Proc. Cambridge Philos. Soc.* 86 (1979), 437-441.
- [54] The Kourovka notebook of unsolved problems in group theory. 7th edition, Novosibirsk, 1980.
- [55] P. B. Kronheimer and T. S. Mrowka. Gauge theory for embedded surfaces. I. *Topology*, 32:773-826, 1993.
- [56] V.S. Krushkal and P. Teichner, Alexander duality, gropes and link homotopy, *Geometry and Topology*, Vol. 1 (1997) Paper no. 5, pages 51-69.
- [57] S. Lambropoulou. Braid structures in knot complements, handlebodies and 3-manifolds. To appear in the proceedings of *Knots in Hellas '98*, Series of *Knots and Everything*, Vol. 24, World Scientific. *math.GT/0008235*
- [58] J. Levine. Pure braids, a new subgroup of the mapping class group and finite type invariants. *math.GT/9712221* (1997).
- [59] J. Levine. Knot cobordism groups in codimension two. *Comment. Math. Helv.* 44 (1969), 229-244.
- [60] J. Levine. Invariants of knot cobordism. *Invent. Math.* 8 (1969), 98-110.

- [61] J. Levine. Doubly sliced knots and doubled disk knots. *Michigan Math. J.* 30 (1983), 249-256.
- [62] H. W. Levinson. Decomposable braids and linkages. *Transactions of the American Mathematical Society* 178 (1973), 111-126.
- [63] H. W. Levinson. Decomposable braids as subgroups of braid groups. *Transactions of the American Mathematical Society* 202 (1975), 51-55.
- [64] R. Litherland. Cobordism of satellite knots. *Four-Manifold Theory, Contemporary Mathematics*, eds. C. Gordon and R. Kirby, American Mathematical Society, Providence RI 1984, 327-362.
- [65] C. Livingston. A survey of classical knot concordance. [math.GT/0307077](https://arxiv.org/abs/math.GT/0307077).
- [66] C. Livingston. Knots which are not concordant to their reverses. *Quart. J. Math. Oxford Ser. (2)* 34 (1983), 323-328.
- [67] C. Livingston. Order 2 algebraically slice knots. *Proceedings of the Kirbyfest (Berkeley, CA, 1998)*, 335-342, *Geom. Topol. Monogr.*, 2, Geom. Topol. Publ., Coventry, 1999.
- [68] C. Livingston. Infinite order amphicheiral knots. *Algebr. Geom. Topol.* 1 (2001), 231- 241.
- [69] C. Livingston. Examples in Concordance. Preprint 2001. [arxiv.org/math.GT/0101035v1](https://arxiv.org/abs/math.GT/0101035v1).
- [70] C. Livingston. The slicing number of a knot. *Algebr. Geom. Topol.* 2 (2002) 1051-1060.
- [71] C. Livingston. Seifert forms and concordance. *Geom. Topol.* 6 (2002), 403-408.
- [72] C. Livingston. The concordance genus of knots. Preprint 2001. [arxiv.org/math.GT/0107141](https://arxiv.org/abs/math.GT/0107141).
- [73] C. Livingston. Splitting the concordance group of algebraically slice knots. Preprint 2003. [arxiv.org/math.GT/0305363](https://arxiv.org/abs/math.GT/0305363).
- [74] C. Livingston and S. Naik. Obstructing four-torsion in the classical knot concordance group. *J. Differential Geom.* 51 (1999), 1-12.
- [75] C. Livingston and S. Naik. Knot concordance and torsion. *Asian J. Math.* 5 (2001), 161-167.
- [76] D. D. Long. Strongly plus-amphicheiral knots are algebraically slice. *Math. Proc. Cambridge Philos. Soc.* 95 (1984), 309-312.
- [77] Magnus, Karrass, and Solitar. *Combinatorial group theory: Presentations of groups in terms of generators and relations*. Second revised edition. Dover Publications, New York, 1976.
- [78] M. Markl, S. Shnider and J. Stasheff. *Operads in Algebra, Topology and Physics*. AMS, 2002.
- [79] J. P. May. *The geometry of iterated loop spaces*. *Lecture Notes in Mathematics*, Vol. 271, Springer, 1972.
- [80] B. Mellor. Finite-type link homotopy invariants II: Milnor's $\bar{\mu}$ invariants. [math.GT/9812119](https://arxiv.org/abs/math.GT/9812119).
- [81] J.W. Milnor. Isotopy of links. *Algebraic geometry and topology*, Princeton Univ. Press (1957) 280-306
- [82] J. W. Milnor. Link Groups. *Annals of Mathematics* 59 (1954), 177-195

- [83] J.W. Milnor. Infinite Cyclic Coverings. *Topology of Manifolds. Complementary Series in Mathematics* vol. 13, ed. J. G. Hocking, Prindle, Weber and Schmidt. Boston, 1968.
- [84] T. Morita. Orders of knots in the algebraic knot cobordism group. *Osaka J. Math.* 25 (1988), 859-864.
- [85] H. Murakami and T. Ohtsuki. Finite type invariants of knots via their Seifert matrices. *Asian J. Math.* 5, 379-386 (2001).
- [86] H. Murakami and A. Yasuhara. Four-genus and four-dimensional clasp number of a knot. *Proc. Amer. Math. Soc.* 128 (2000), 3693-3699.
- [87] K. Murasugi. On a certain numerical invariant of link types. *Trans. Amer. Math. Soc.* 117 (1965), 387-422.
- [88] K. Murasugi. The Arf invariant for knot types. *Proc. Amer. Math. Soc.* 21 (1969) 69-72.
- [89] R. Myers. Homology cobordisms, link concordances, and hyperbolic 3-manifolds. *Trans. Amer. Math. Soc.* 278 (1983), 271-288.
- [90] S. Naik. Casson-Gordon invariants of genus one knots and concordance to reverses. *J. Knot Theory Ramifications* 5 (1996), 661-677.
- [91] S. Naik. Equivariant concordance of knots in S^3 . *KNOTS '96* (Tokyo), 81-89, World Sci. Publishing, River Edge, NJ, 1997.
- [92] Y. Nakanishi. A note on unknotting number. *Math. Sem. Notes Kobe Univ.* 9 (1981), 99-108.
- [93] Y. Nakanishi. Prime links, concordance and Alexander invariants. *Math. Sem. Notes Kobe Univ.* 8 (1980), 561-568.
- [94] K. Y. Ng and T. Stanford. On Gusarov's groups of knots. *Mathematical Proceedings of the Cambridge Philosophical Society* 126 (1999), 63-76.
- [95] T. Ohtsuki. Problems on invariants of knots and 3-manifolds. *Invariants of Knots and 3-Manifolds*, Kyoto University 2001. *Geometry and Topology Monographs*, Volume 4 (2002).
- [96] Y. Ohyama. Vassiliev invariants and similarity of knots. *Proceedings of the American Mathematical Society* 123 (1995) no. 1, 287-291.
- [97] J.A. Rasmussen. Khovanov homology and the slice genus. *math.GT/0402131* 2004.
- [98] R. Robertello. An invariant of knot cobordism. *Comm. Pure Appl. Math.* 18 (1965) 543-555.
- [99] D. Rolfsen. "Knots and Links" *Mathematics Lecture Series* 7. Publish or Perish, Wilmington, DE, 1976.
- [100] L. Rudolph. The slice genus and the Thurston-Bennequin invariant of a knot. *Proc. Amer. Math. Soc.* 125 (1997), 3049-3050.
- [101] R. Sandling. The dimension subgroup problem. *Journal of Algebra* 21 (1972), 216-231.
- [102] R. Schneiderman and P. Teichner. Higher order intersection numbers of 2-spheres in 4-manifolds. *Algebraic and Geometric Topology* 1, 1-29 (2001).

- [103] J. Stallings. Homology and central series of groups. *J. Algebra* 2 (1965) 1970-1981.
- [104] T. Stanford. Brunnian braids and some of their generalizations. [math.GT/9907072](#).
- [105] T. Stanford. Vassiliev invariants and knots modulo pure braid subgroups. [math.GT/9805092](#).
- [106] T. Stanford. Braid commutators and Vassiliev invariants. *Pacific Journal of Mathematics* 174 (1996) no. 1, 269-276.
- [107] T. Stanford. Braid commutators and delta finite-type invariants. [math.GT/9907071](#).
- [108] J. D. Stasheff. Homotopy associativity of H-spaces I. *Trans. A. M. S.* 108(1963), 275-292.
- [109] N. Stoltzfus. Unraveling the integral knot concordance group. *Memoirs of the AMS* (1977), no. 192.
- [110] N. Stoltzfus. Equivariant concordance of invariant knots. *Trans. Amer. Math. Soc.* 254 (1979), 1-45.
- [111] D.W. Sumners. Invertible knot cobordisms. *Comment. Math. Helv.* 46 (1971), 240-256.
- [112] A. Tamulis. Concordance of Classical Knots. Thesis (1999) Indiana University, Bloomington.
- [113] K. Taniyama. On similarity of knots. *Gakujutsu Kenkyu, School of Education, Waseda University. Series of Mathematics* 41 (1993), 33-36.
- [114] M. B. Thistlethwaite. A spanning tree expansion of the Jones polynomial. *Topology* 26 (1987), no. 3, 297-309.
- [115] A. Tristram. Some cobordism invariants for links. *Proc. Camb. Phil. Soc.* 66 (1969), 251-264.
- [116] V. A. Vassiliev. Cohomology of Knot Spaces. *Theory of Singularities and its Applications*, ed. V. I. Arnold, A.M.S, Providence 1990.