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On the Vassiliev knot invariants

D [Bar-Natan](#) - *Topology*, 1995 - 128,100,68,6

Abstract. The theory of knot invariants of finite type (Vassiliev invariants) is described. These invariants turn out to be at least as powerful as the Jones polynomial and its numerous generalizations coming from various quantum groups, and it is conjectured that these

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On Khovanov's categorification of the Jones polynomial

D [Bar-Natan](#) - *Algebraic and Geometric Topology*, 2002 - [emis.ams.org](#)

Abstract The working mathematician fears complicated words but loves pictures and diagrams. We thus give a no-fancy-anything picture rich glimpse into Khovanov's novel construction of the categorification of the Jones polynomial". For the same low cost we also

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Khovanov's homology for tangles and cobordisms

D [Bar-Natan](#) - *Geometry & Topology*, 2005 - [emis.ams.org](#)

Abstract We give a fresh introduction to the Khovanov Homology theory for knots and links, with special emphasis on its extension to tangles, cobordisms and 2-knots. By staying within a world of topological pictures a little longer than in other articles on the subject, the required

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On the Melvin–Morton–Rozansky conjecture

D [Bar-Natan](#), S Garoufalidis - *Inventiones mathematicae*, 1996 - Springer

Abstract. We prove a conjecture stated by Melvin and Morton (and elucidated further by Rozansky) saying that the Alexander–Conway polynomial of a knot can be read from some of the coefficients of the Jones polynomials of cables of that knot (ie, coefficients of the

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Perturbative aspects of the Chern-Simons topological quantum field theory

DD [Bar-Natan](#) - Ph. D. Thesis, 1991 - [adsabs.harvard.edu](#)

Abstract We investigate the Feynman-diagram perturbative expansion of the Chern-Simons topological quantum field theory. After introducing the theory, we compute the on-loop expectation value for knots and links, recovering Gauss' linking number formula for links and

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The knot atlas

D [Bar-Natan](#), S Morrison - 2005

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A comprehensive online database of information on knots and links, plus programs to compute most of this information. See <http://katlas.org>.

Perturbative Chern-Simons theory

D [Bar-Natan](#) - *Journal of Knot Theory and its Ramifications*, 1995 - World Scientific

We present the perturbation theory of the Chern-Simons gauge field theory and prove that to second order it indeed gives knot invariants. We identify these invariants and show that in fact we get a previously unknown integral formula for the Arf invariant of a knot, in complete

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Vassiliev homotopy string link invariants

D [Bar-Natan](#) - *Journal of Knot Theory and its Ramifications*, 1995 - World Scientific

We investigate Vassiliev homotopy invariants of string links, and find that in this particular case, most of the questions left unanswered in [3] can be answered affirmatively. In particular, Vassiliev invariants classify string links up to homotopy, and all Vassiliev

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Fast Khovanov homology computations

D [Bar-Natan](#) - *Journal of Knot Theory and Its Ramifications*, 2007 - World Scientific

We introduce a local algorithm for Khovanov homology computations—that is, we explain how it is possible to "cancel" terms in the Khovanov complex associated with a ("local") tangle, hence canceling the many associated "global" terms in one swoosh early on. This

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On associators and the Grothendieck-Teichmüller group, I

D [Bar-Natan](#) - *Selecta Mathematica*, 1998 - Springer

Abstract. We present a formalism within which the relationship (discovered by Drinfel'd in [Dr1],[Dr2]) between associators (for quasi-triangular quasi-Hopf algebras) and (a variant of) the Grothendieck-Teichmüller group becomes simple and natural, leading to a simplification

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Non-associative tangles

D Bar-Natan - Geometric topology (proceedings of the Georgia ... , 1996 - books.google.com

Abstract. Following Drinfel'd, Kontsevich and Piunikhin, we study the iterated integral expression for the holonomy of the formal Knizhnik-Zamolodchikov connection, finding that by introducing non-associative tangles, tangles whose strands are grouped in some

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Perturbative expansion of Chern-Simons theory with non-compact gauge group

D Bar-Natan, E Witten - Communications in mathematical physics, 1991 - Springer

Abstract Naive imitation of the usual formulas for compact gauge group in quantizing three dimensional Chern-Simons gauge theory with non-compact gauge group leads to formulas that are wrong or unilluminating. In this paper, an appropriate modification is described,

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Wheels, wheeling, and the Kontsevich integral of the unknot

D Bar-Natan, S Garoufalidis, L Rozansky... - Israel Journal of ... , 2000 - Springer

Abstract We conjecture an exact formula for the Kontsevich integral of the unknot, and also conjecture a formula (also conjectured independently by Deligne [De]) for the relation between the two natural products on the space of uni-trivalent diagrams. The two formulas

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Two applications of elementary knot theory to Lie algebras and Vassiliev invariants

D Bar-Natan, TTQ Le, DP Thurston - Geometry and Topology, 2003 - emis.ams.org

Abstract Using elementary equalities between various cables of the unknot and the Hopf link, we prove the Wheels and Wheeling conjectures of [5, 9], which give, respectively, the exact Kontsevich integral of the unknot and a map intertwining two natural products on a

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The Århus integral of rational homology 3-spheres I: A highly non trivial flat connection on S^3

D Bar-Natan, S Garoufalidis, L Rozansky... - Selecta ... , 2002 - Springer

Abstract. Path integrals do not really exist, but it is very useful to dream that they do and figure out the consequences. Apart from describing much of the physical world as we now know it, these dreams also lead to some highly non-trivial mathematical theorems and

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The Aarhus integral of rational homology 3-spheres II: Invariance and universality

D Bar-Natan, S Garoufalidis, L Rozansky... - Selecta ... , 2002 - Springer

Abstract. We continue the work started in [Å-I], and prove the invariance and universality in the class of finite type invariants of the object defined and motivated there, namely the Århus integral of rational homology 3-spheres. Our main tool in proving invariance is a translation

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Solving the bible code puzzle

B McKay, D Bar-Natan, M Bar-Hillel, G Kalai - Statistical Science, 1999 - JSTOR

A paper of Witztum, Rips and Rosenberg in this journal in 1994 made the extraordinary claim that the Hebrew text of the Book of Genesis encodes events which did not occur until millennia after the text was written. In reply, we argue that Witztum, Rips and Rosenberg's

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A table of virtual knots

J Green, D Bar-Natan - 2004

(like the knot atlas, but for "virtual knots")

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The Karoubi envelope and Lee's degeneration of Khovanov homology

D Bar-Natan, S Morrison - Algebraic & Geometric Topology, 2006 - msp.org

In a beautiful article [5], Eun Soo Lee introduced a second differential $\hat{}$ on the Khovanov complex of a knot (or link) and showed that the resulting double complex has uninteresting homology. In a seemingly contradictory manner, this is a very interesting result—for this

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The fundamental theorem of Vassiliev invariants

D Bar-Natan, A Stoimenow - arXiv preprint q-alg/9702009, 1997 - arxiv.org

Abstract: The "fundamental theorem of Vassiliev invariants" says that every weight system can be integrated to a knot invariant. We discuss four different approaches to the proof of this theorem: a topological/combinatorial approach following M. Hutchings, a geometrical

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A rational surgery formula for the LMO invariant

D Bar-Natan, R Lawrence - *Israel Journal of Mathematics*, 2004 - Springer

Abstract We write a formula for the LMO invariant of a rational homology sphere presented as a rational surgery on a link in S^3 . Our main tool is a careful use of the Aarhus integral and the (now proven) "Wheels" and "Wheeling" conjectures of BN, Garoufalidis, Rozansky and

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Lie algebras and the four color theorem

D Bar-Natan - *Combinatorica*, 1997 - Springer

Let us start by recalling a well-known construction that associates to any finite dimensional metrized Lie algebra L a numerical-valued functional WL defined on the set of all oriented trivalent graphs G (that is, trivalent graphs in which every vertex is endowed with a cyclic ordering of the edges

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Polynomial invariants are polynomial

D Bar-Natan - arXiv preprint q-alg/9606025, 1996 - arxiv.org

Abstract: We show that (as conjectured by Lin and Wang) when a Vassiliev invariant of type m is evaluated on a knot projection having n crossings, the result is bounded by a constant times n^m . Thus the well known analogy between Vassiliev invariants and

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Vassiliev and quantum invariants of braids

D Bar-Natan - *Proceedings of Symposia in Applied Mathematics*, 1995 - books.google.com

ABSTRACT. We prove that braid invariants coming from quantum $gl(N)$ separate braids, by recalling that these invariants (properly decomposed) are all Vassiliev invariants, showing that all Vassiliev invariants of braids arise in this way, and reproving that Vassiliev invariants

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Weights of Feynman diagrams and the Vassiliev knot invariants

D Bar-Natan - preprint, 1991 - pdfs.semanticscholar.org

Abstract Given a representation of a Lie algebra and an ad-invariant bilinear form we show how to assign numerical weights to a certain collection of graphs. This assignment is then shown to satisfy certain relations first written by Birman and Lin as consistency conditions for

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Dror Bar-Natan

(Google error - not a publication)

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Page 1. Online since 1994! Copyleft Notice © Publications Talks Classes Gallery Students Codes KAtlas Wiki Pensieve Misc Random **Dror Bar-Natan** Professor, Department of Mathematics, University of Toronto, Toronto, Ontario, Canada. Office: Bahen Centre Room

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Bibliography of Vassiliev invariants

D Bar-Natan, S Duzhin - Web publication <http://www.ma.huji.ac.il/~drorbn/>, 1994 - pdmi.ras.ru

1. List of Additions 2 2. Electronic Addresses 5 3. Acknowledgement 12 4. References 12 4.1. References beginning with A 12 4.2. References beginning with B 13 4.3. References beginning with C 15 4.4. References beginning with D 17 4.5. References beginning with E

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According to google, my h-index (see <https://en.wikipedia.org/wiki/H-index>) is approximately 26.

Finite-type invariants of w-knotted objects, I: w-knots and the Alexander polynomial

D Bar-Natan, Z Dancso - *Algebraic & Geometric Topology*, 2016 - msp.org

This is the first in a series of papers studying w-knots, and more generally, w-knotted objects (w-braids, w-tangles, etc). These are classes of knotted objects which are wider, but weaker than their "usual" counterparts. The group of w-braids was studied (under the name "welded

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The Aarhus integral of rational homology 3-spheres III: Relation with the Le–Murakami–Ohtsuki invariant

D Bar-Natan, S Garoufalidis, L Rozansky... - *Selecta* ..., 2004 - Springer

Abstract. Continuing the work started in [A-I] and [A-II], we prove the relationship between the Aarhus integral and the invariant Ω (henceforth called LMO) defined by TQT Le, J. Murakami and T. Ohtsuki in [LMO]. The basic reason for the relationship is that both constructions

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Finite type invariants of W-knotted Objects: From Alexander to Kashiwara and Vergne

D Bar-Natan, Z Dancso - arXiv preprint arXiv:1309.7155, 2013 - arxiv.org

Abstract. w-Knots, and more generally, w-knotted objects (w-braids, w-tangles, etc.) make a class of knotted objects which is wider but weaker than their "usual" counterparts. To get (say) w-knots from u-knots, one has to allow non-planar "virtual" knot diagrams, hence enlarging the the base

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