ON MUTATIONS AND VASSILIEV INVARIANTS (NOT) CONTAINED IN KNOT POLYNOMIALS

ALEXANDER STOIMENOW

It is known that the Brandt-Lickorish-Millett-Ho polynomial Q contains Casson's knot invariant. Whether there are (essentially) other Vassiliev knot invariants obtainable from Q is an open problem. We show that this is not so up to degree ≤ 9. We also give the (apparently) first example of knots not distinguished by 2-cable HOMFLY polynomials, which are not mutants. Our calculations provide evidence against the conjecture that Vassiliev knot invariants of degree ≤ 10 are determined by the HOMFLY and Kauffman polynomial and their 2-cables, and for the existence of algebras of such Vassiliev invariants not isomorphic to the algebras of their weight systems.

University of Toronto