On Cabled Knots and Vassiliev Invariants (Not) Contained in Knot Polynomials

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Abstract. 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 examples of knots not distinguished by 2-cable HOMFLY polynomials which are not mutants. Our calculations provide evidence of a negative answer to the question whether Vassiliev knot invariants of degree $d \leq 10$ are determined by the HOMFLY and Kauffman polynomials and their 2-cables, and for the existence of algebras of such Vassiliev invariants not isomorphic to the algebras of their weight systems.