

Abstract

We use the 2-loop term of the Kontsevich integral to show that there are (many) knots with trivial Alexander polynomial which do not have a Seifert surface whose genus equals the rank of the Seifert form. This is one of the first applications of the Kontsevich integral to intrinsically 3-dimensional questions in topology. Our examples contradict a lemma of Mike Freedman, and we explain what went wrong in his argument and why the mistake is irrelevant for topological knot concordance.