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The $SL(2, C)$ Casson invariant

We present some joint results with Cindy Curtis on the $SL(2, C)$ Casson invariant for 3-manifolds. This invariant was defined by Curtis, who also established a surgery formula. Despite these results, only few computations of the invariant are known. One class of examples we explore are Seifert-fibered 3-manifolds, where we present a closed formula for the $SL(2, C)$ Casson invariant which is interesting to compare with the corresponding formula for the $SU(2)$ Casson. Moreover, combining these results with known results on the Culler–Shalen seminorms, we provide computations for families of 3-manifolds arising as Dehn surgeries on knots with Seifert slopes. This approach is used to investigate the behavior of the $SL(2, C)$ Casson invariant for surgeries on twist knots and pretzel knots.