Susan M. Abernathy* (sabern1@tigers.lsu.edu). The Kauffman bracket ideal for genus-1 tangles.

Given a compact oriented 3-manifold $M$ in $S^3$ with boundary, an $(M, 2n)$-tangle $T$ is a 1-manifold with $2n$ boundary components properly embedded in $M$. We say that $T$ embeds in a link $L$ in $S^3$ if $T$ can be completed to $L$ by a 1-manifold with $2n$ boundary components exterior to $M$. The link $L$ is called a closure of $T$. We define the Kauffman bracket ideal of $T$ to be the ideal $I_T$ of $\mathbb{Z}[A^\pm 1]$ generated by the reduced Kauffman bracket polynomials of all closures of $T$. If this ideal is non-trivial, then $T$ does not embed in the unknot. We give an algorithm for computing a finite list of generators for the Kauffman bracket ideal of any $(S^1 \times D^2, 2)$-tangle, also called a genus-1 tangle, and give an example of a genus-1 tangle with non-trivial Kauffman bracket ideal. Furthermore, we show that if a single-component genus-1 tangle $T'$ can be obtained as the partial closure of a $(B^3, 4)$-tangle $T$, then $I_T = I_{T'}$. (Received September 12, 2013)