

On Deformations of the Hoste-Przytycki Homotopy Skein Modules

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For an oriented connected 3-manifold M , we will define a skein module generated by isotopy classes of links in connected sums of M with j copies of $S^1 \times S^2$ for $j \geq 0$, with skein relations using Dehn surgery. This construction is motivated by searching for new viewpoints on HOMFLYPT skein modules and is strongly related with the Hoste-Przytycki homotopy skein modules. In this setting we will discuss in detail the homotopy skein modules of $S^1 \times S^2$ and of the connected sum operation. There are also generalizations possible based on different Dehn surgeries.