

Graph-Skein Modules of Three-Manifolds

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Let $\mathcal{R} = \mathbb{Z}[A^{\pm 1}, \delta^{-1}]$, where $\delta = -A^2 - A^{-2}$. Let M be a three-manifold and let \mathcal{G} be the set of all isotopy classes of ribbon graphs embedded in M . We define the Yamada skein module of M as the quotient of the free module $\mathcal{R}[\mathcal{G}]$ by the skein relations introduced by S. Yamada to define the topological invariant of spatial graphs known as the Yamada polynomial. We compute this module for Handelbodies and explore its relationship with the Kauffman bracket skein module.