Unicity for Representations of the Kauffman Bracket Skein Algebra

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Let F be a connected, closed, oriented surface, with finitely many (possibly none) points removed, and let ζ be a root of unity. The Kauffman bracket skein algebra of F, denoted $K_\zeta(F)$, is formed by taking $\mathbb{C}$–linear combinations of isotopy classes of links in a cylinder over F, and modding out by the Kauffman bracket skein relation, with the parameter ζ. Multiplication is given by placing one link over another and extending linearly. Bonahon and Wong associate to each irreducible representation of $K_\zeta(F)$ a classical shadow, which is determined by its central character, and conjecture that there is a generic family of classical shadows for which there is a unique irreducible representation of the skein algebra realizing that classical shadow. In joint work with Charles Frohman and Thang Le we resolve this conjecture. The proof is a consequence of a general unicity theorem that says that the irreducible representations of a prime affine k-algebra over an algebraically closed field k, that is finitely generated as a module over its center, are generically classified by their central characters.

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