Irreducible SL(2,C)-representations of integer homology 3-sphere

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Abstract:

We prove that the splicing of any two non-trivial knots in the 3-sphere admits an irreducible SU(2)-representation of its fundamental group. This uses instanton gauge theory, and in particular a non-vanishing result of Kronheimer-Mrowka and some new results that we establish for holonomy perturbations of the ASD equation. Using a result of Boileau, Rubinstein and Wang (which builds on the geometrization theorem of 3-manifolds), it follows that the fundamental group of any integer homology 3-sphere different from the 3-sphere admits irreducible representations of its fundamental group in SL(2,C).

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