



Minisymposium 23 - Mathematische Physik und Informationstheorie

Can braiding operators serve as universal gates for quantum computation?

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After a short introduction on knot theory and the Jones-Polynomial we discuss the problem of finding unitary matrices satisfying the braiding relations. Programs for a computer using these unitaries as gates could be represented as braids. Special solutions might be useful for universal quantum computing, but some standard solutions lead only to computations which can be simulated efficiently in a classical framework. Our interest in knot theory is based on the fact that approximating the Jones-Polynomial is BQP-hard.