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Title: Planar algebra of diagonal subfactor

Abstract: Starting with a finite set $\{\theta_i\}_{i \in I}$ of automorphisms of a II_1 factor N , one can construct the *diagonal subfactor* $N \subset M_I(N)$ where an element $x \in N$ sits in $M_I(N)$ diagonally where the i -th diagonal element is given by $\theta_i(x)$. Diagonal subfactors play an important role in the theory; a correspondence between amenability of such subfactors and amenability of the group generated by the automorphisms in $Out(N)$ was obtained by Sorin Popa. We will describe the standard invariant, or equivalently, the planar algebra of such subfactors. In a special case, this planar algebra matches with Jones's example of planar algebra associated to finitely generated group.