REPRESENTATIONS OF VIRTUAL BRAID GROUPS TO THE ROOK ALGEBRAS

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In [1] S. Bigelow, E. Ramos, R. Yi constructed representation of the group B_n in the group of invertible elements of the subalgebra $\mathbb{C}P_n$ of the rook algebra $\mathbb{C}R_n$. We will demonstrate that to extend the braid group given representation to a virtual braid group representation one will need to extend the algebra $\mathbb{C}P_n$ in some sense. We will construct a representation of the group VB_n to rook algebra $\mathbb{C}R_n$ such that its restriction on B_n coincides with the representation of the group B_n in the $\mathbb{C}P_n$.

In [2] T. Kadokami classified closed virtual 2-braids completely as virtual links and showed, that nontrivial closures of different virtual 2-braids are equal if and only if this braids are conjugate. Using this fact we will also show that our representation can be used for construction some invariants of virtual links.

References

[1] S. Bigelow, E. Ramos, R. Yi, The Alexander and Jones polynomials through representation of rook algebras, *Journal of Knot Theory and Its Ramifications*, Vol. 12, No. 12, 2012.

[2] T. Kadokami, Classification of closed virtual 2-braids, *Journal of Knot Theory and Its Ramifications*, Vol. 17, No. 10, 2008.

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