REPRESENTATIONS OF VIRTUAL AND SINGULAR BRAID GROUPS

KOZLOVSKAYA T. A. AND SOKOLOV P. P.

Аннотация. In the present paper, we study various representations of the virtual braid group VB_n, the singular braid monoid SM_n, and the singular braid group SB_n. We construct a representation of the virtual braid group into the group of automorphisms of the quandle. We prove that this representation generalizes some well-known representations. Using this representation, we construct an invariant of virtual links.

We investigate representations of the singular braid monoid SM_n and the singular braid group SB_n by endomorphisms and automorphisms of a free module and a free group. In particular, we find all linear local homogeneous representations of the singular braid monoid that extend the Burau representation of the braid group and find conditions under which these representations can be extended to the group SB_n. We prove that the constructed linear representation is reducible and an irreducible representation is obtained that extends the reduced Burau representation.

Key words: virtual braid group, singular braid group, Burau representation, knot, link, quandle.

Kozlovskaya Tatyana Anatolevna, Regional Scientific and Educational Mathematical Center of Tomsk State University, 36 Lenin Ave., 634050, Tomsk, Russia.
  Email address: t.kozlovskaya@math.tsu.ru

Sokolov Pavel Petrovich, Novosibirsk State University, Pirogova street, 1, 630030, Novosibirsk, Russia.
  Email address: p.sokolov@g.nsu.ru