All about twisted virtual braids

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Abstract

Twisted virtual braids are a combinatorial generalization of virtual braids. In this talk, I will discuss the relationship between twisted virtual braids and twisted links, by stating the theorems for twisted virtual braids corresponding to the Alexander theorem and the Markov theorem in knot theory. Interestingly, the set of twisted virtual braids on n strands forms a group. I will present a group presentation and also a reduced group presentation of the twisted virtual braid group. This is a collaborative work with S. Kamada and M. Prabhakar [1].

In the second part of this talk, I will discuss the invariants for twisted virtual braids which is defined by using the concept of warping degree. I will also show that the up-down labeling [2] can be extended to twisted virtual braids. Furthermore, we prove that by restricting the labeling set to $\mathbb{Z}_2$, we can construct invariants for twisted virtual braids. This is a joint work with A. Shimizu and M. Prabhakar.

References

[1] K. Negi, M. Prabhakar, S. Kamada, *Twisted virtual braids and twisted links*, Osaka Journal of Mathematics, Vol. 61(Issue 4), (2023).

[2] K. Negi, A. Shimizu, M. Prabhakar, *Warping Labeling for twisted knots and twisted virtual braids*, arXiv:2406.08505, 2024.