

CONFIGURATIONS OF POINTS IN LINK COMPLEMENTS

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This talk is suitable for a general audience.

I begin by describing braid groups and their Lawrence representations. It is known that one of these representations is faithful. Inspired by this result, and by the fact that braids and links are closely related, one may ask (1) whether new link invariants can be obtained in a similar way, and (2) if one of them is faithful.

While (2) remains open, the answer to (1) is yes. For a link $L \subset \mathbb{R}^3$, let $M_k(L)$ denote the configuration space of k distinct points in the complement $\mathbb{R}^3 \setminus L$ whose z -coordinates are equal. I shall present the easy proof that the fundamental group of $M_k(L)$ depends only on the isotopy class of L . I don't know if more properties of $M_k(L)$ depend only on the isotopy class of L .

Every braid group representation gives rise to a twisted k -th homology module of $\pi_1(M_k(L))$: these are examples of new link invariants. They are not faithful, but there are ideas how to surpass this.