

The self-distributive structure of parenthesized braids

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Artin's braid group B_∞ is equipped with a remarkable left self-distributive operation that reflects a deep connection between braids and the self-distributive law. A similar connection exists between R. Thompson's group F and the associativity law. Mixing the two laws leads to introducing a new group B_\bullet that extends both B_∞ and F , and whose elements can be viewed as braids in which the distances between the strands need not be uniform. Many properties of B_∞ extend to B_\bullet , in particular the connection with the fundamental group of a punctured surface, the embeddability in the automorphisms of a free group, and the existence of a self-distributive structure. Now the most interesting algebraic point is that B_\bullet comes equipped with a second operation compatible with the self-distributive operation in a natural way ("augmented LD-system"), which cannot be the case for ordinary braids.