

Braids and the Jones polynomial

Thesis presentation

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Geometric definition of braids

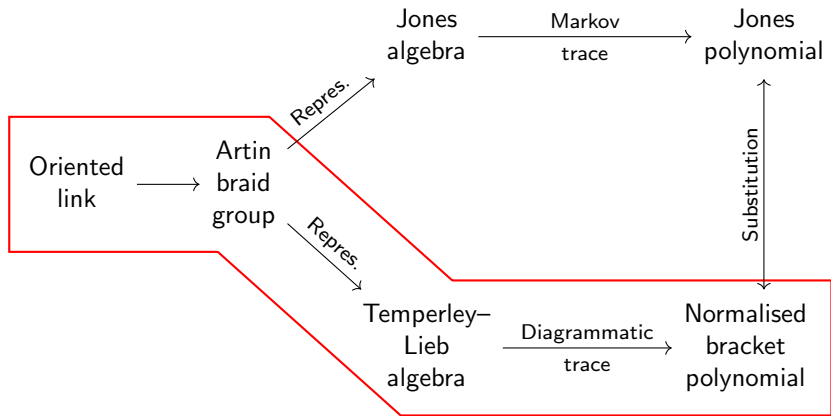


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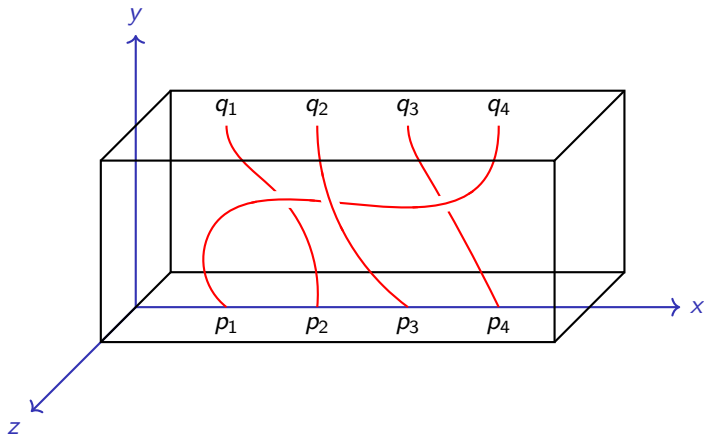


Figure: Three dimensional geometric representation of a braid

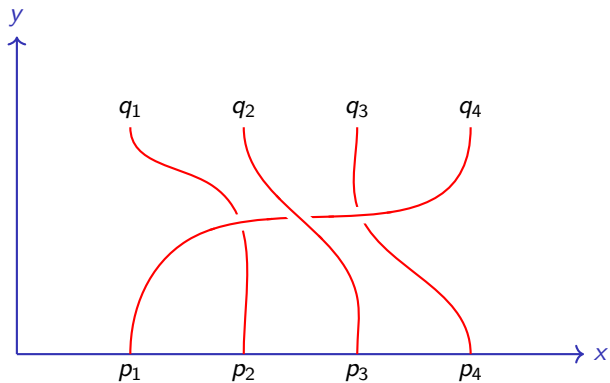


Figure: A projection of the braid

Multiplication of braids

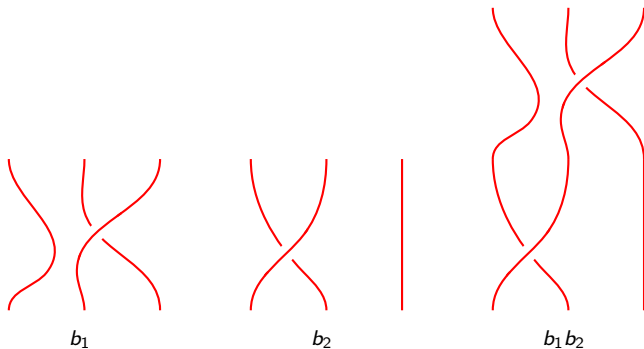


Figure: Multiplication of two braids

The identity braid \mathbb{I}_n

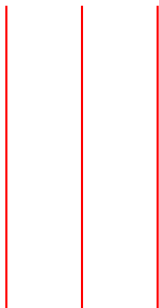


Figure: The identity \mathbb{I}_3

Inverse of braids

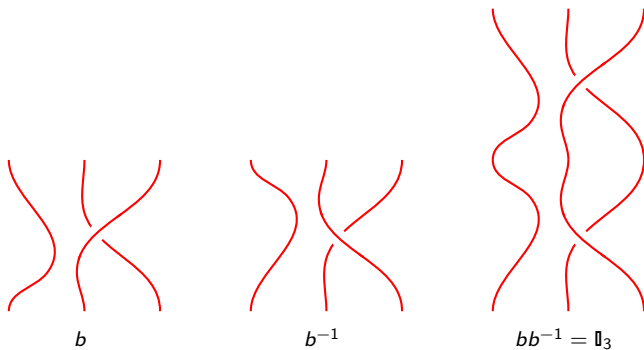


Figure: Inverse of a braid

Thus, braids form a group, known as the Artin braid group.

Generators of the braid group

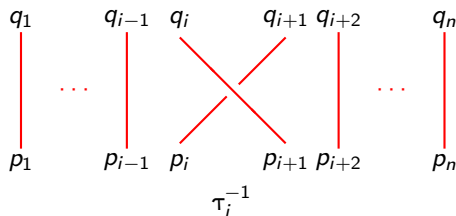
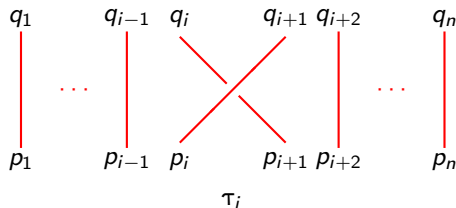


Figure: Generators τ_i and τ_i^{-1}

Type III move: $\tau_i \tau_{i+1} \tau_i = \tau_{i+1} \tau_i \tau_{i+1}$

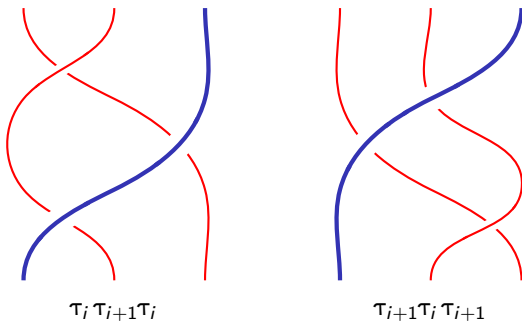


Figure: A type III move illustrating $\tau_i \tau_{i+1} \tau_i = \tau_{i+1} \tau_i \tau_{i+1}$