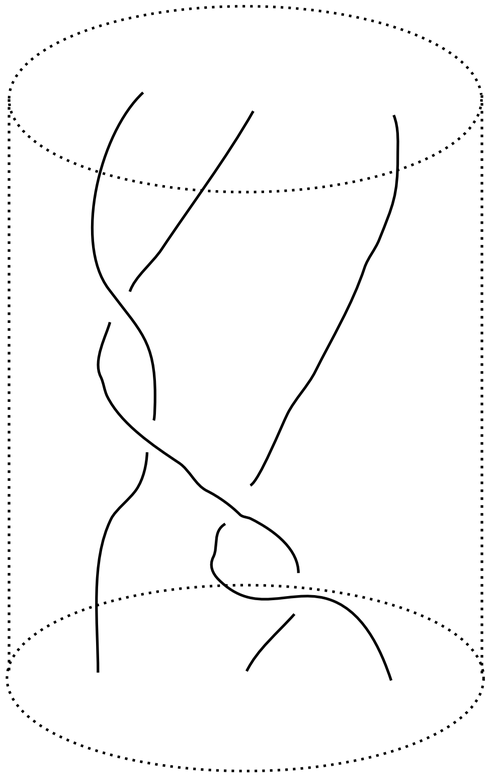
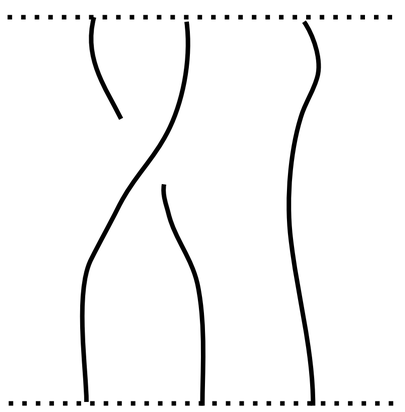
Topological braids

- 1D Submanifold M of $D^2 \times I$ with boundary, having n components, so that projection $\pi_I \colon M \to I$ is a covering map.
- Braid group describes isotopy classes.
- σ_i is crossing of ith strand underneath (i+1)th strand.





Fundamental quotients

- Exponential sum $\gamma\colon B_n \to \mathbb{Z}$.
  - $\gamma(\sigma_{i_1}^{\epsilon_1} \ldots \sigma_{i_m}^{\epsilon_m}) = \sum_{i=1}^{m} \epsilon_i$
- Permutation: $\phi\colon B_n \to S_n$
  - $\phi(\sigma_i) = (i\ i+1)$