Algebraization of Low-Dimensional Topology

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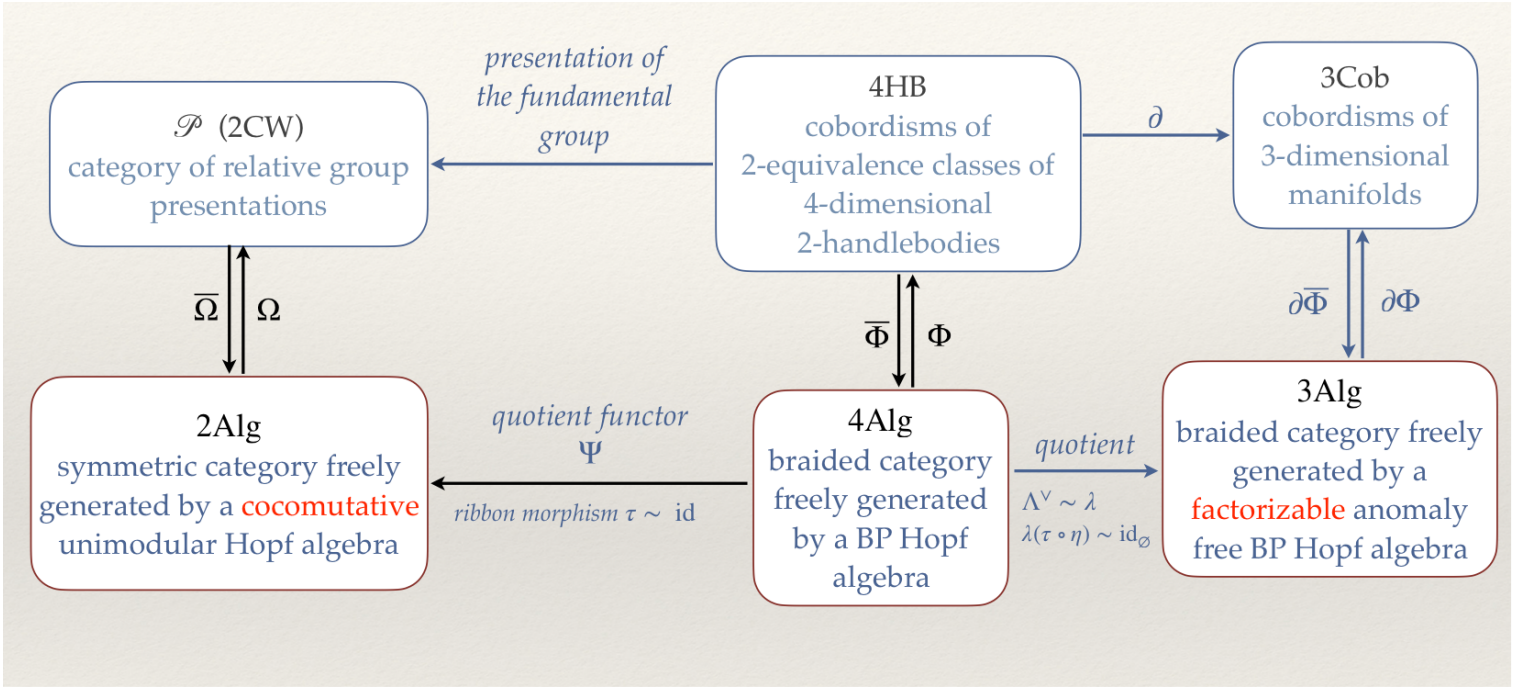
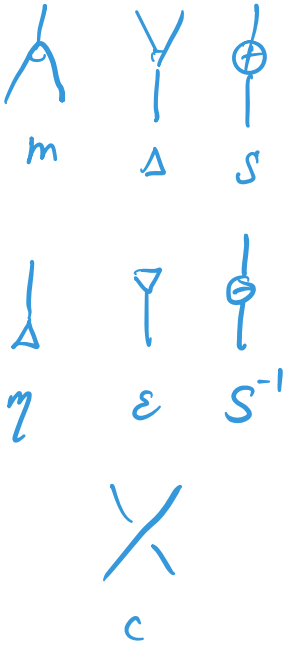
Thm: The functors Ω, Φ and $\partial\Phi$ are equivalences of categories. Moreover, the following diagram commutes.





BP Hopf algebra axioms (in addition to the Hopf algebra axioms)

Λ = *integral element* $\quad$ λ = *integral form* $\quad$ τ^n = *ribbon morphisms* $\quad$ w = *copairing*

Elementary morphisms

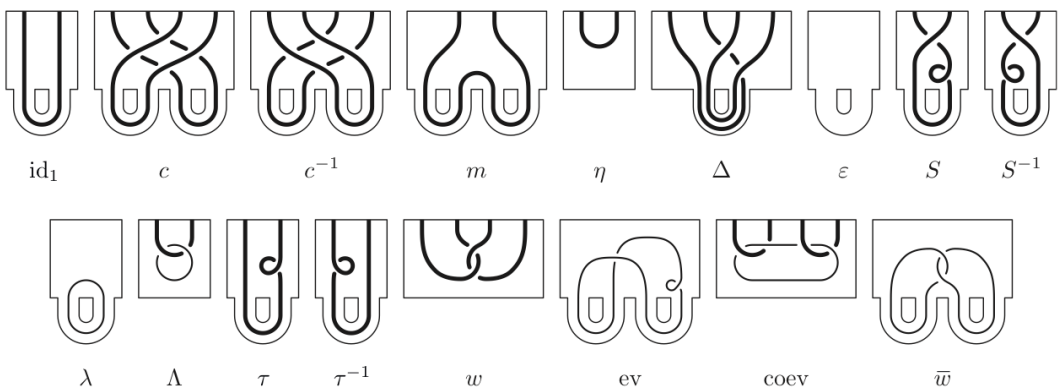
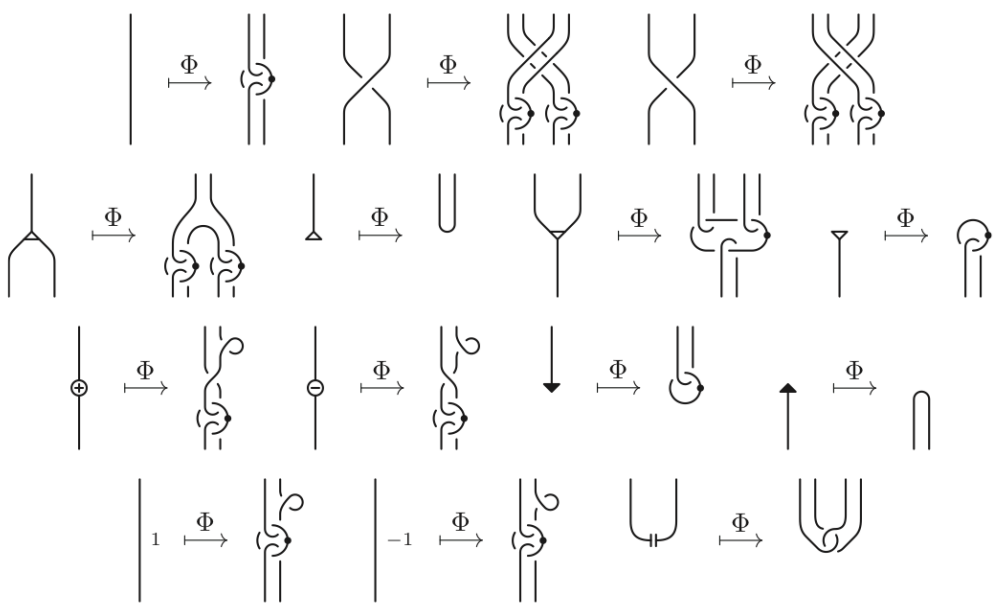
(i1) (i2) (i3) $\emptyset$ (i4) (i5)

Integral axioms

(r1) (r2) (r3) (r4) (r5) (r6) (r7) (r8) (r9)

Ribbon axioms

BP generators in 3Cob



BP generators in 4HB in terms of Kirby diagrams