Info

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TQFT on category of bordisms

Definition. TQFT on category of bordisms

$$\mathsf{TQFT} : \mathsf{Bordism}_n \to \mathsf{Vec}_{\mathbb{C}}$$

be a functor from (diffeomorphism class) bordisms to complex vector spaces which preserves the tensor product in each categories (that is, a tensor functor)

$$\mathsf{TQFT}(N_1 \coprod N_2) = \mathsf{TQFT}(N_1) \otimes \mathsf{TQFT}(N_2)$$

Here, by definition $\mathsf{TQFT}(N)$ only depend on diffeomorphism class of N.

Corollary: $\mathsf{TQFT}(N)$ is a representation of $\pi_0(\mathrm{Diff}(N))$?

QFT gives such a functor

- $$N_i, N_f \in \mathsf{Bordism}_n$$
  be the initial and final spacetimes, then
  $$\phi_i \in X^{N_i}, \phi_f \in X^{N_f}$$
  the field configurations,
  - so a state vector is
    $$\Psi(\phi) \in' L^2(X^N)' =: \mathsf{TQFT}(N)$$
- then
  $$M : N_i \to N_f$$
  - which must give us some
    $$K_M(\phi_i, \phi_f)$$
    that is the result of the path integral
  - then
    $$(\mathsf{TQFT}(M)\Psi)(\phi_f) := \int_{\phi_i} K(\phi_i, \phi_f)\Psi(\phi_i)$$

Current note has 0 direct children and 0 total descendants.

- structures based on sets
  - manifolds
    - smooth $\mathbb{R}$-manifold
      - bord
        - TQFT on category of bordisms

And it has 2 siblings.

- structures based on sets
  - manifolds
    - smooth $\mathbb{R}$-manifold
      - bord
        - Ring of closed manifolds upto cobordism
        - TQFT on category of bordisms