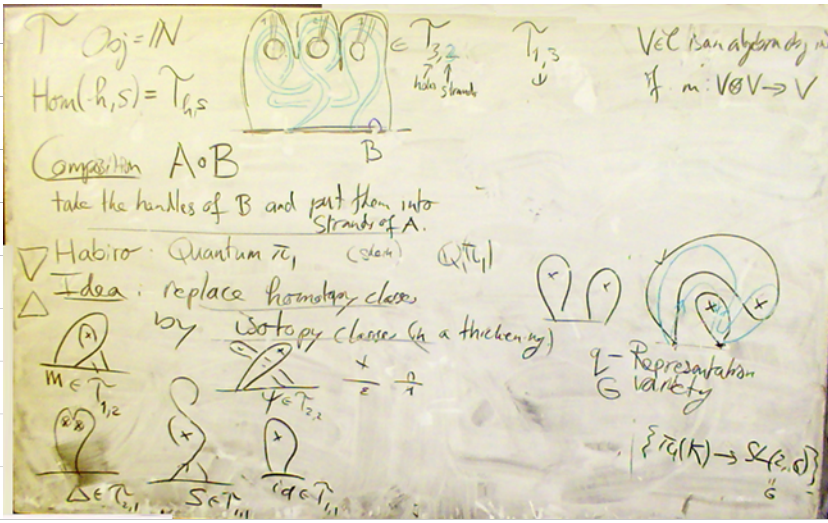
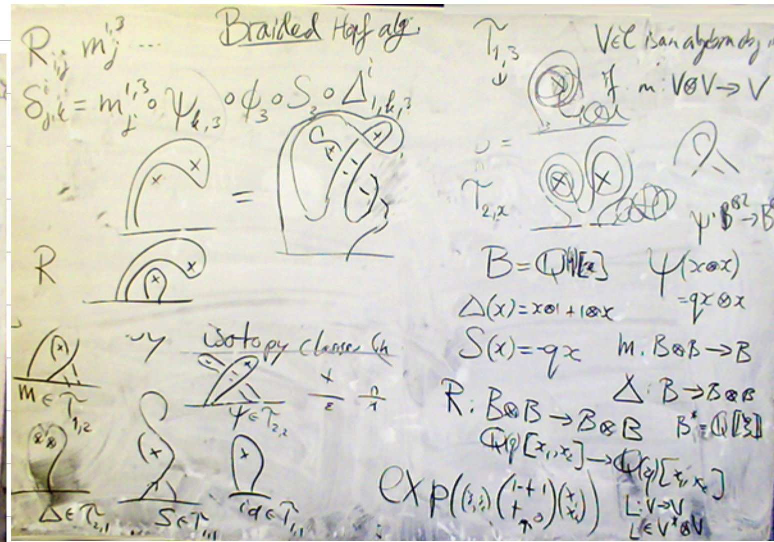
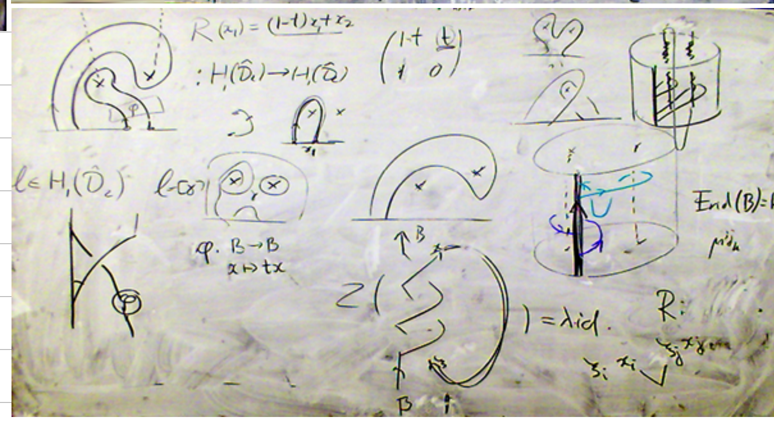
In BBS/VanDerVeen (more there!):



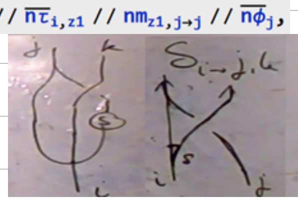




In AP/People/VanDerVeen/2024-02_Visit_to_Toronto/GFB6@.nb:

The new objects:

```
$n = 1; Define[
  nI_i = 𝔼_{i}→{i}[0, ξ_i x_i, 1],
  nm_{i,j→k} = 𝔼_{i,j}→{k}[0, (ξ_i + ξ_j) x_k, 1],
  nτ_{i,j} = 𝔼_{i,j}→{i,j}[0, ξ_i x_i + ξ_j x_j, 1 + ħ ξ_i x_i ξ_j x_j + O[ħ]^2],
  n̄τ_{i,j} = 𝔼_{i,j}→{i,j}[0, ξ_i x_i + ξ_j x_j, 1 - ħ ξ_i x_i ξ_j x_j + O[ħ]^2] (**),
  nS_i = 𝔼_{i}→{i}[0, -ξ_i x_i, 1 + ħ ξ_i^2 x_i^2/2 + O[ħ]^2],
  n̄S_i = 𝔼_{i}→{i}[0, -ξ_i x_i, 1 - ħ ξ_i^2 x_i^2/2 + O[ħ]^2],
  nΔ_{i→j,k} = 𝔼_{i}→{j,k}[0, (x_j + x_k) ξ_i, 1 + ħ ξ_i^2 x_j x_k/2 + O[ħ]^2],
  nϕ_i = 𝔼_{i}→{i}[0, T ξ_i x_i, 1],
  n̄ϕ_i = 𝔼_{i}→{i}[0, T^-1 ξ_i x_i, 1],
  nδ_{i→j,k} = nΔ_{i→1,2} // nΔ_{2→k,3} // nS_3 // nϕ_3 // nτ_{k,3} // nm_{1,3→j},
  nR_{i,j} = nϕ_j // nδ_{i→1,i} // nτ_{i,j} // nm_{1,j→j},
  n̄R_{i,j} = nδ_{i→z1,i} // n̄τ_{z1,j} // n̄S_{z1} // n̄τ_{i,j} // n̄τ_{i,z1} // nm_{z1,j→j} // n̄ϕ_j,
  nC_i = 𝔼_{i}→{i}[0, ξ_i x_i, 1 + ξ_i x_i ħ + O[ħ]^2],
  n̄C_i = 𝔼_{i}→{i}[0, ξ_i x_i, 1 - ξ_i x_i ħ + O[ħ]^2],
  nKinkr_i = (nR_{1,3} n̄C_2 // nμ_{1,2→1} // nμ_{1,3→i}),
  nKinkl_i = (nR_{3,1} nC_2 // nμ_{1,2→1} // nμ_{1,3→i}),
  n̄Kinkr_i = (n̄R_{3,1} n̄C_2 // nμ_{1,2→1} // nμ_{1,3→i}),
  n̄Kinkl_i = (n̄R_{1,3} nC_2 // nμ_{1,2→1} // nμ_{1,3→i}) ]
```




```
(*For composing tensors, leg by leg*)
nμ_{i_,j_→k_}[𝔼_{d_→r_}[0, Q_, P_]] := Module[{v},
   QZip_{ξ_v}[𝔼[0, Q /. {ξ_j → ξ_v, x_i → x_v, ξ_i → ξ_k, x_j → x_k},
     P /. {ξ_j → ξ_v, x_i → x_v, ξ_i → ξ_k, x_j → x_k}]]
  ] /. 𝔼 → 𝔼_(d/.{i→Nothing,j→k})→(r/.{i→Nothing,j→k})
```

$nR_{i,j}$

$$\mathbb{E}_{\{i,j\}\to\{i,j\}}\Big[0,\ x_i\,\xi_i + (1-T)\,x_j\,\xi_i + T\,x_j\,\xi_j,\ 1 + \Big(\tfrac{1}{2}(1-3T)\,x_i\,x_j\,\xi_i^2 + \tfrac{1}{2}(-T+T^2)\,x_j^2\,\xi_i^2 + T\,x_i\,x_j\,\xi_i\,\xi_j\Big)\hbar + O[\hbar]^2\Big]$$

$n\delta_{i\to j,k}$

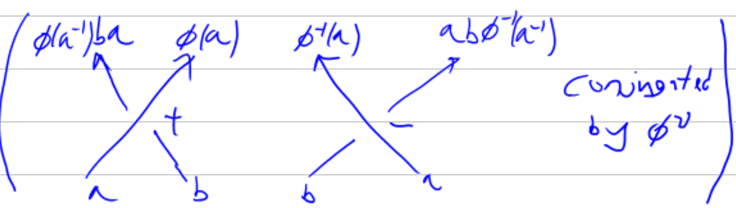
$$\mathbb{E}_{\{i\}\to\{j,k\}}\Big[0,\ (1-T)\,x_j\,\xi_i + x_k\,\xi_i,\ 1 + \Big(\tfrac{1}{2}(-T+T^2)\,x_j^2\,\xi_i^2 + \tfrac{1}{2}(1-3T)\,x_j\,x_k\,\xi_i^2\Big)\hbar + O[\hbar]^2\Big]$$

In Monoblog:

170317 Wikipedia: q-derivative: $D_{q,x}f(x) = \frac{f(qx)-f(x)}{qx-x}$; has $D_{q,x}\mathbb{e}_q^x = \mathbb{e}_q^x$ (and $\mathbb{e}_q^0 = 1$); seek it and $\mathbb{e}_q^x$ and $xy = qyx$ in nature. Finds: $[a,x] = x \Rightarrow \mathbb{e}^{ta}x = \mathbb{e}^t x \mathbb{e}^{ta}$. Also, in tensor powers with $X_k := \mathbb{e}^{t(a_1+\ldots+a_{k-1})}x_k$, have $X_kX_l = \mathbb{e}^t X_l X_k$ for $k<l$.

In Notebook-2024:

$(G \ltimes_\phi \mathbb{Z}$ at $\mathbb{Z}$-level $-1) \Longleftrightarrow$



$\langle ybax \rangle = \langle a \rangle \ltimes \langle ybx \rangle$