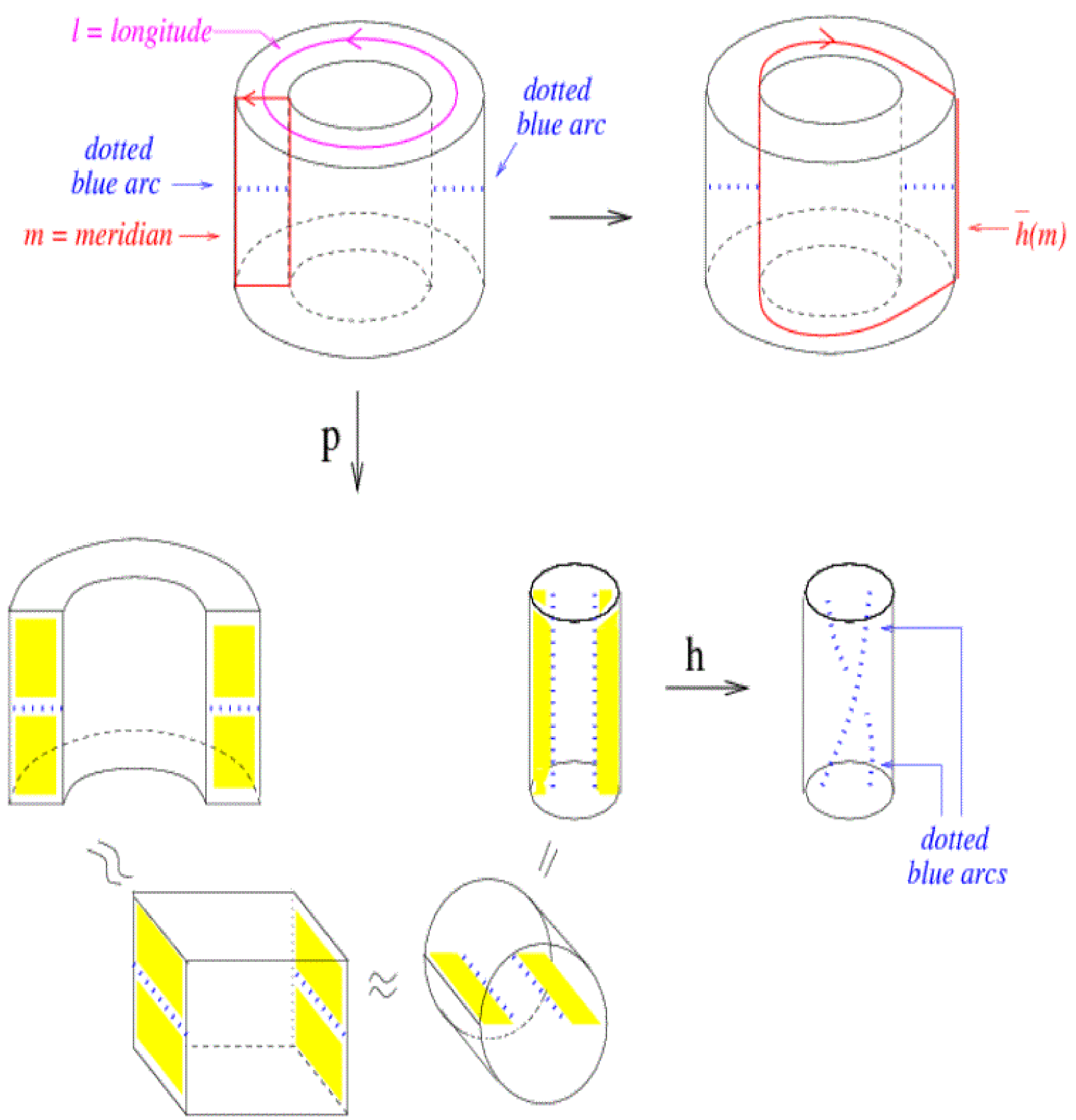
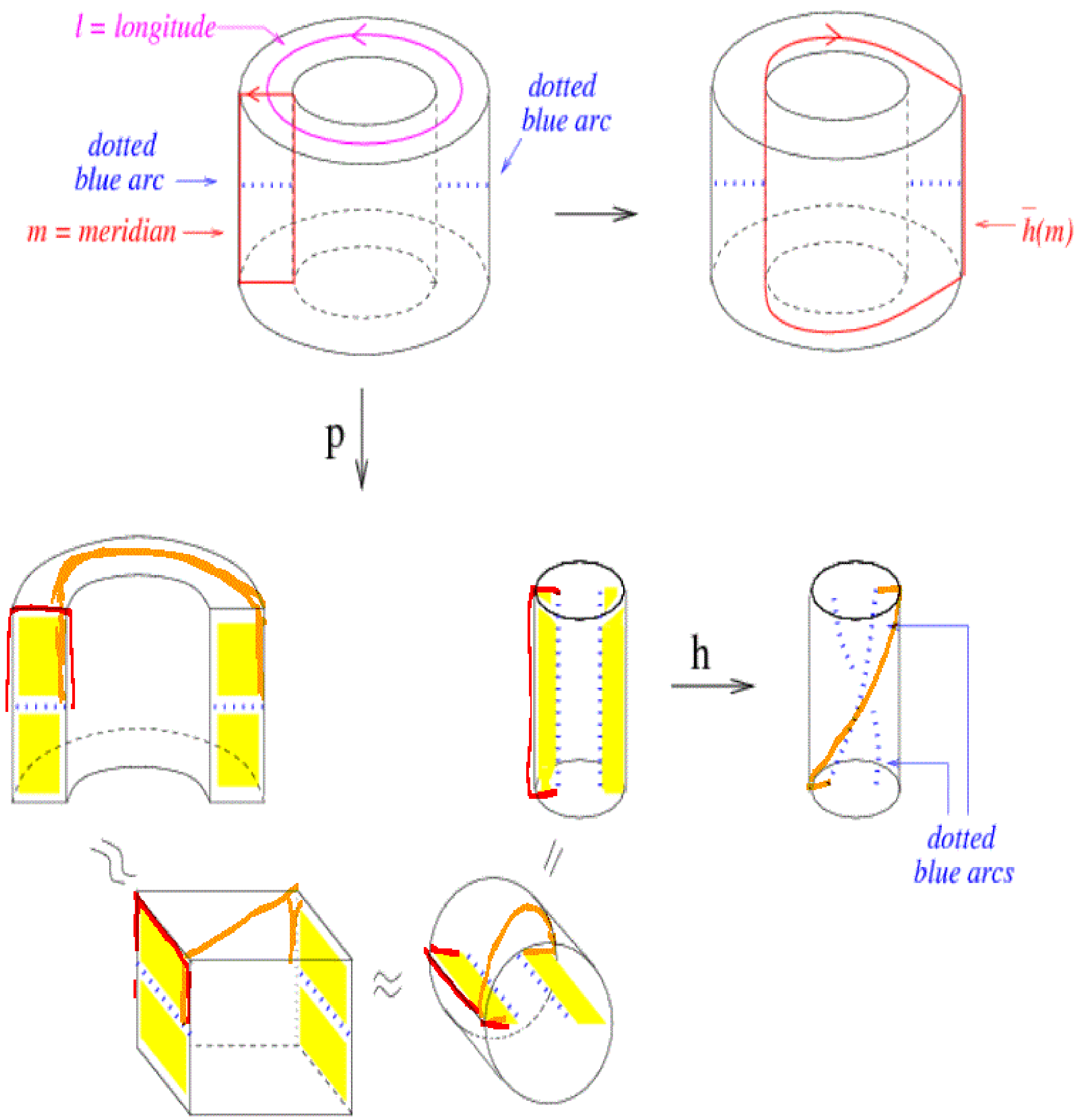
Feb 23

Note Title 2/22/2010

Review :



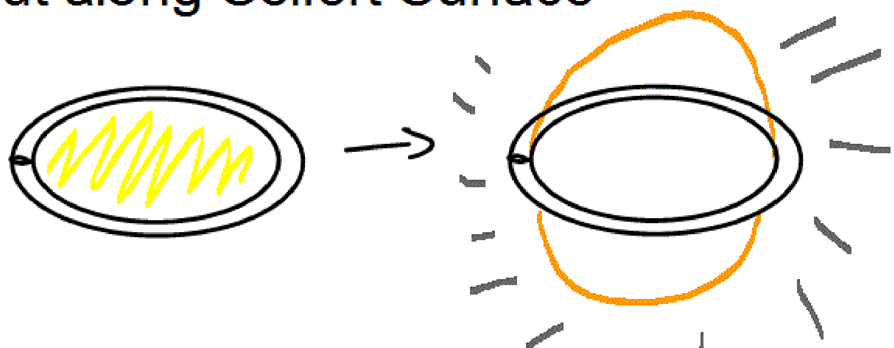
Looking at M - V w/a focus on ∂(M - V) = ∂V



Tangle method for finding double cover

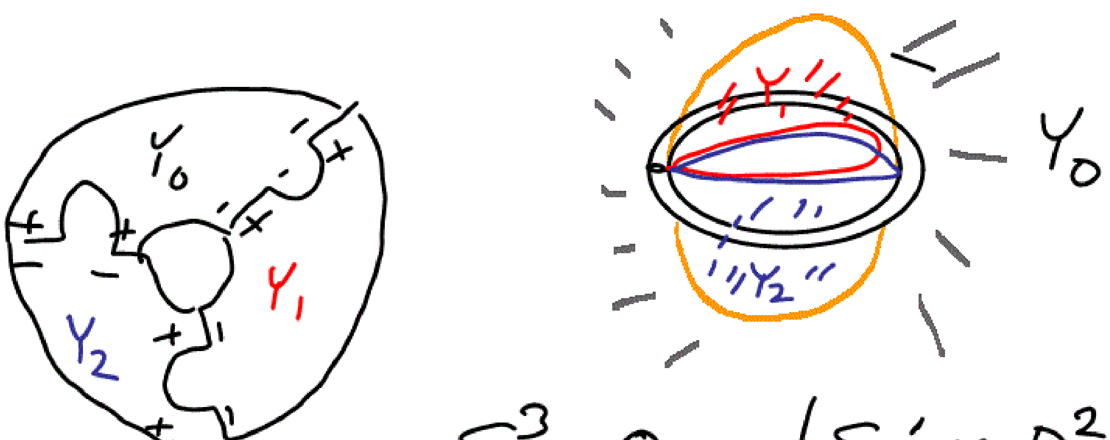
$$\widetilde{(S^3 \setminus O_1)}_3 = \text{3-fold cyclic cover of } S^3 \setminus O_1$$

1.) cut along Seifert Surface



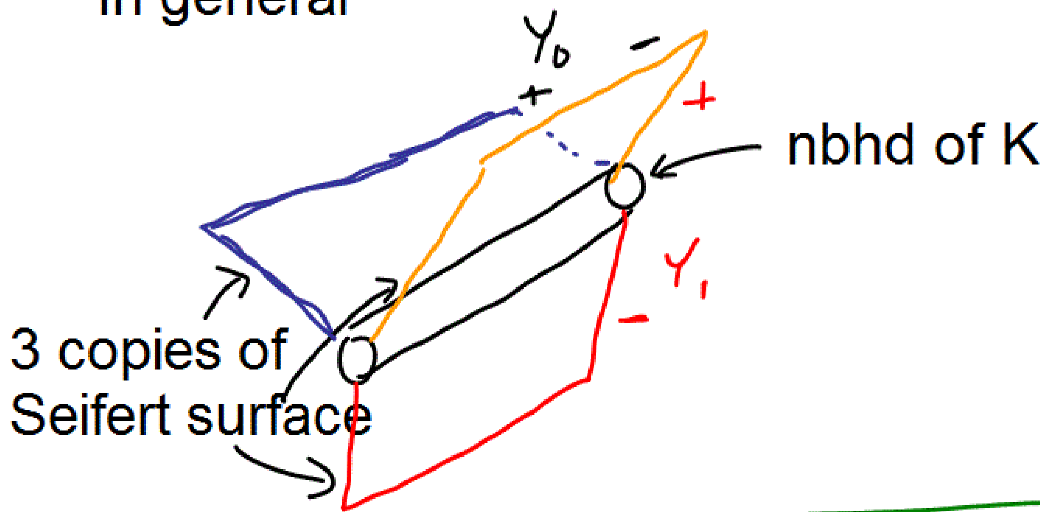
$$S^3 \setminus B^3 = B^3$$

2.) glue together 3 copies



$$S^3 \setminus O_1 = (S^1 \times D^2)^o$$

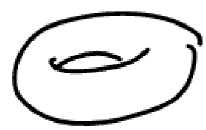
In general

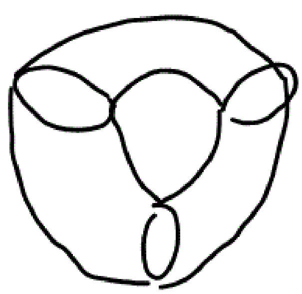


Alternate method

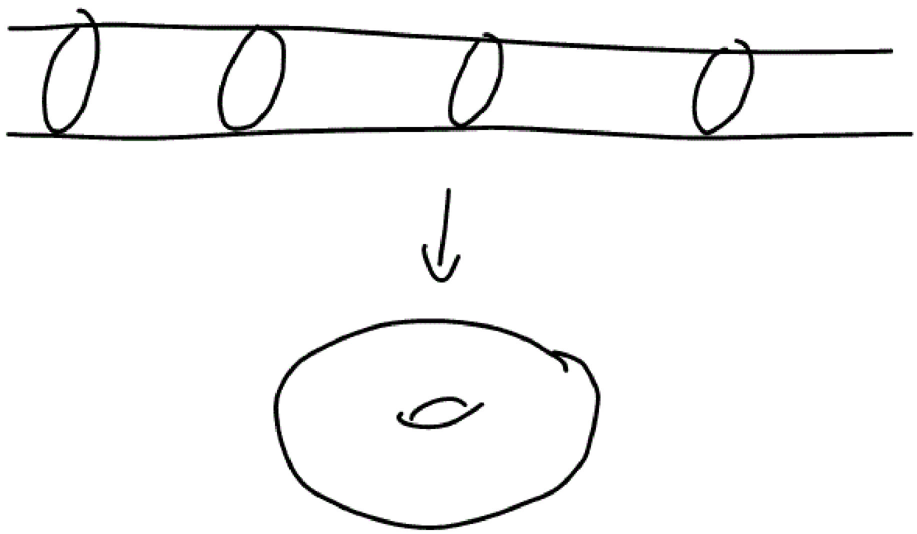
Note $S^3 \setminus O_1 = (S^1 \times D^2)^0$

$=$ 

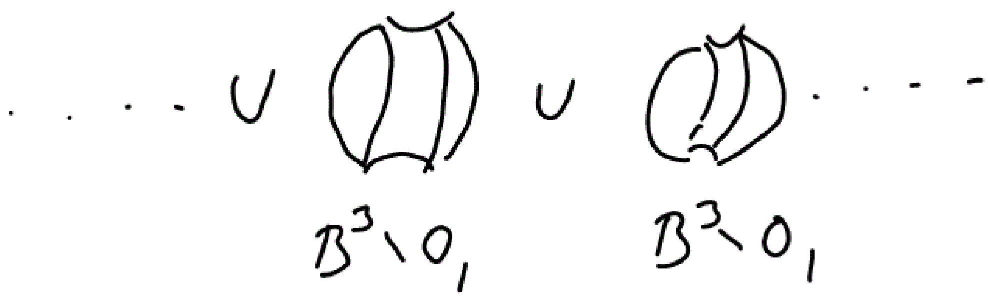
Triple cover of 

$=$  $= (S^1 \times D^2)^0$

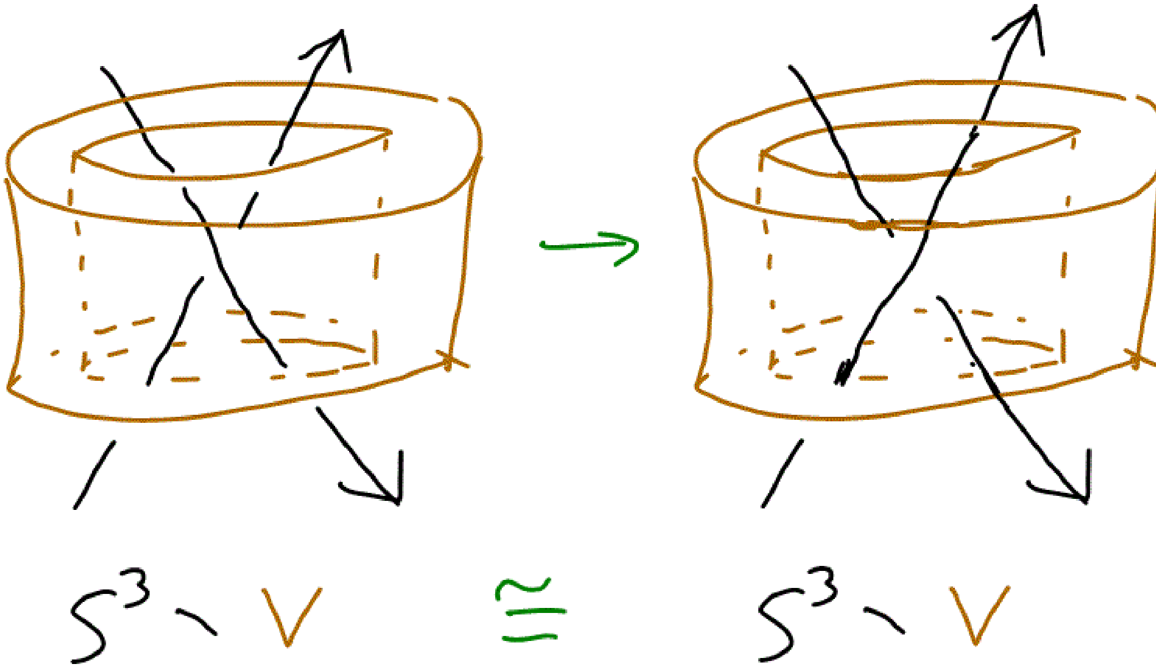
Infinite cyclic cover of S^3 - unknot

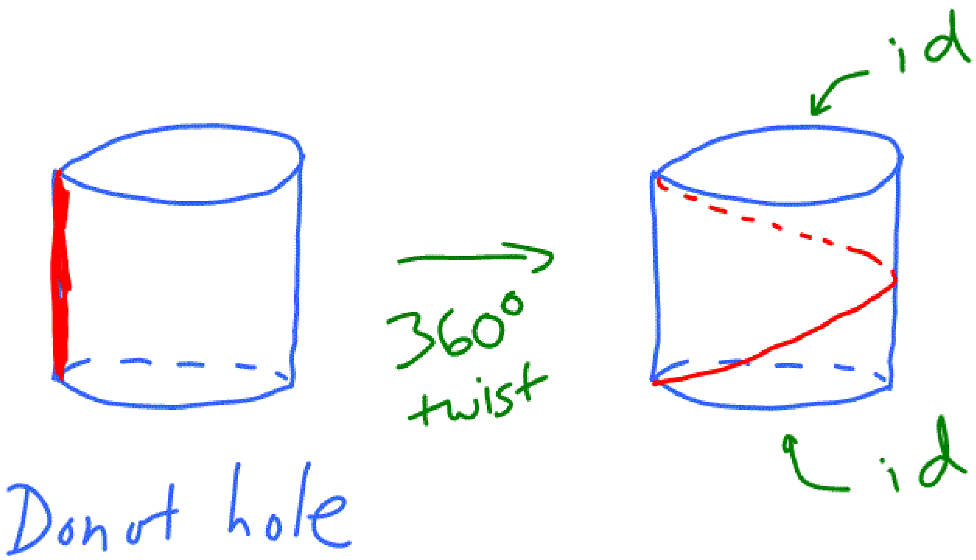


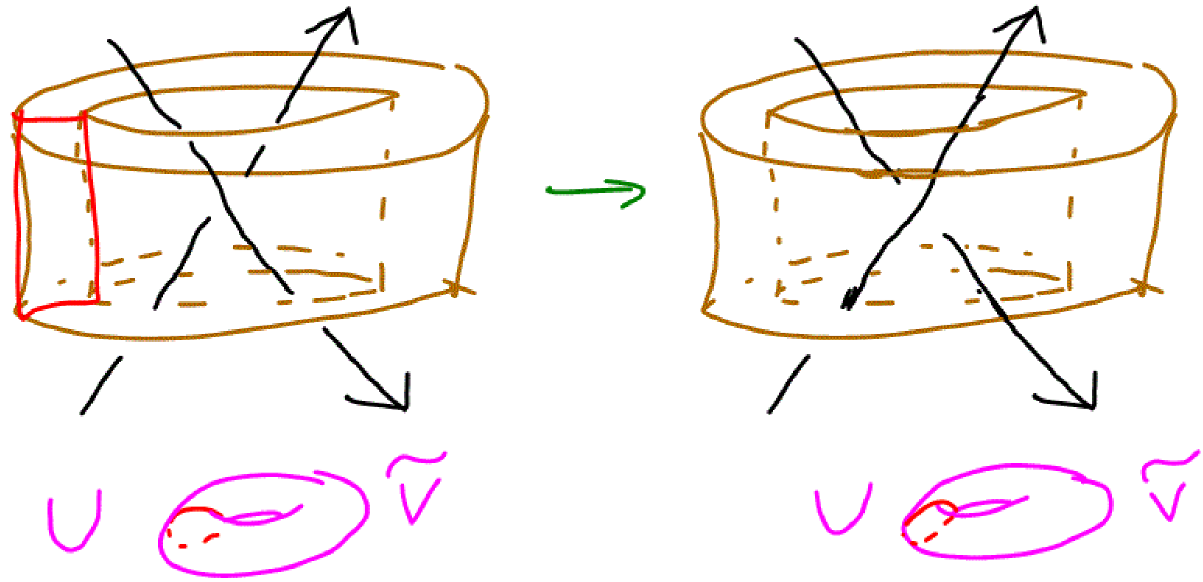
first method



Section 6C

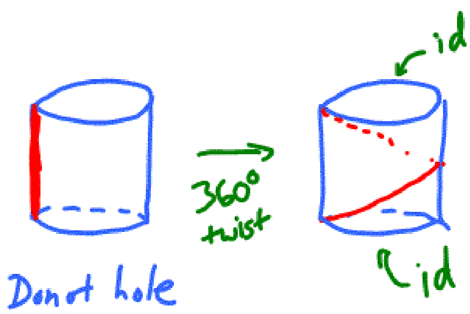






$$S^3 = (S^3 \setminus V) \cup_{\tilde{m} \to ?} \tilde{V} \cong (S^3 \setminus V) \cup_{\tilde{m} \to ?} \tilde{V}$$

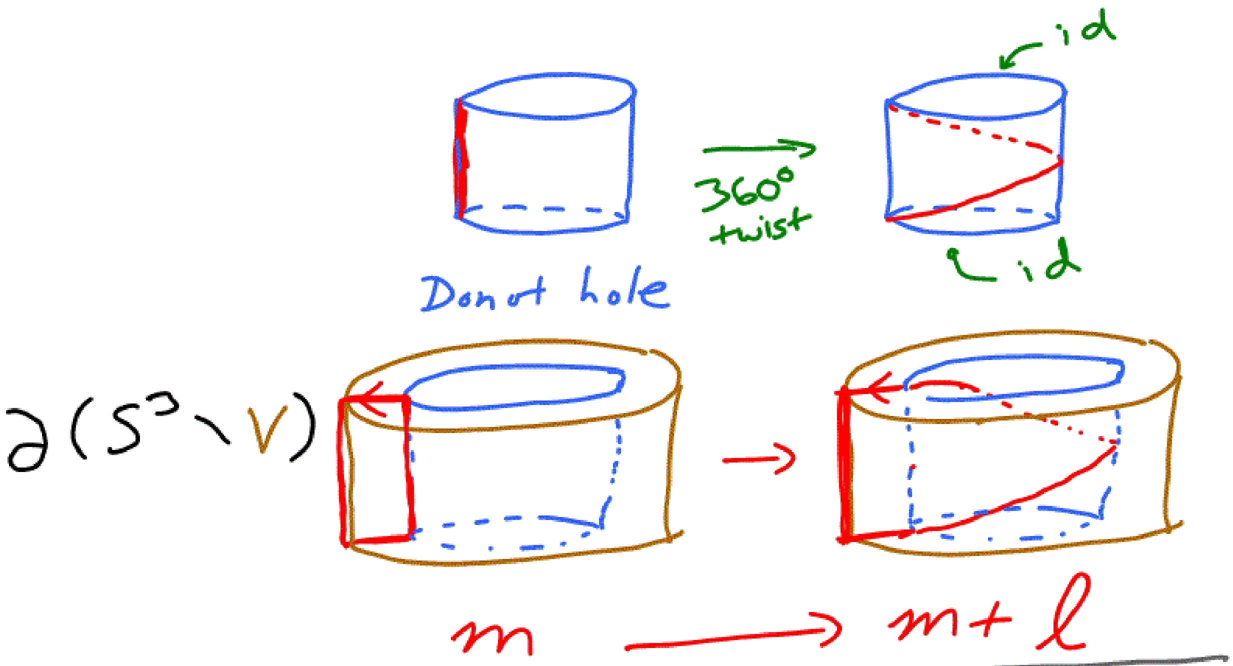
since

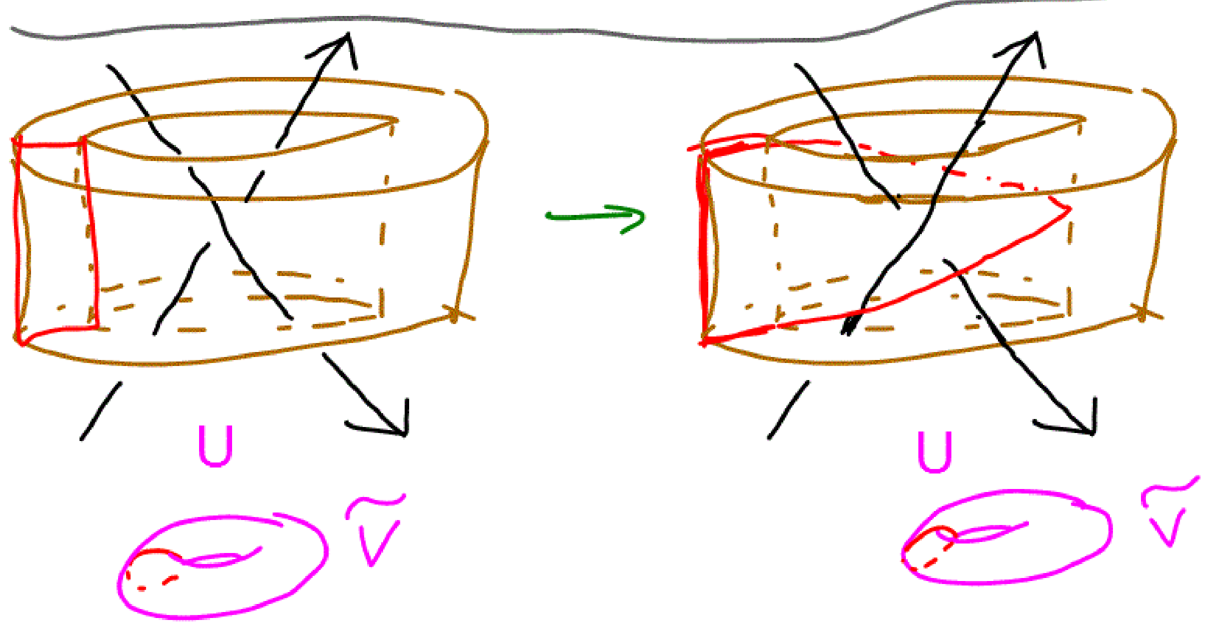


$$S^3 \setminus V \underset{\text{twist donut hole } 360^\circ}{\cong} S^3 \setminus V$$

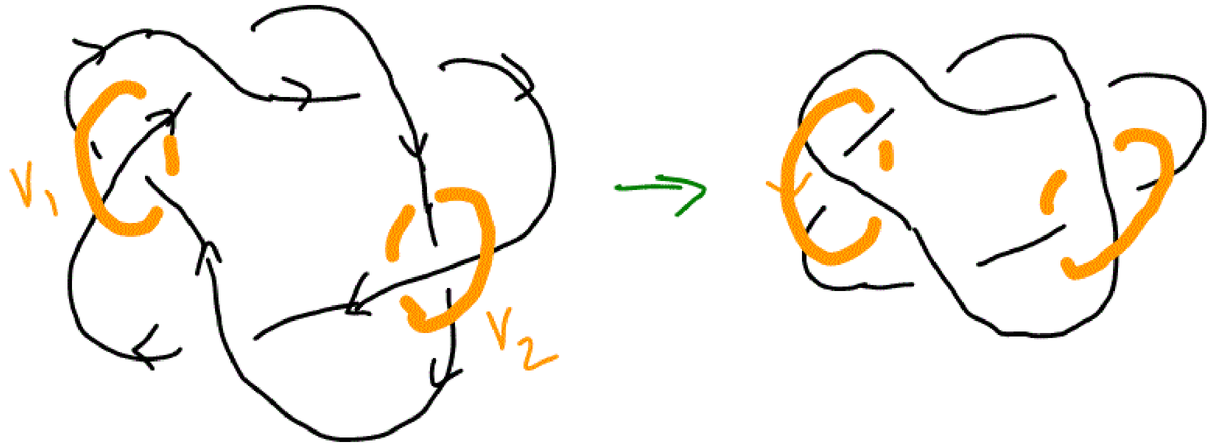
$$\tilde{V} \underset{id}{\cong} \tilde{V}$$

$$\tilde{m} \to \tilde{m}$$



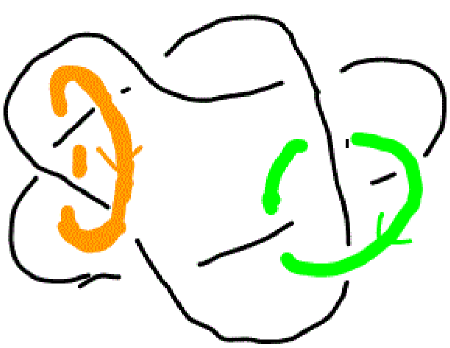


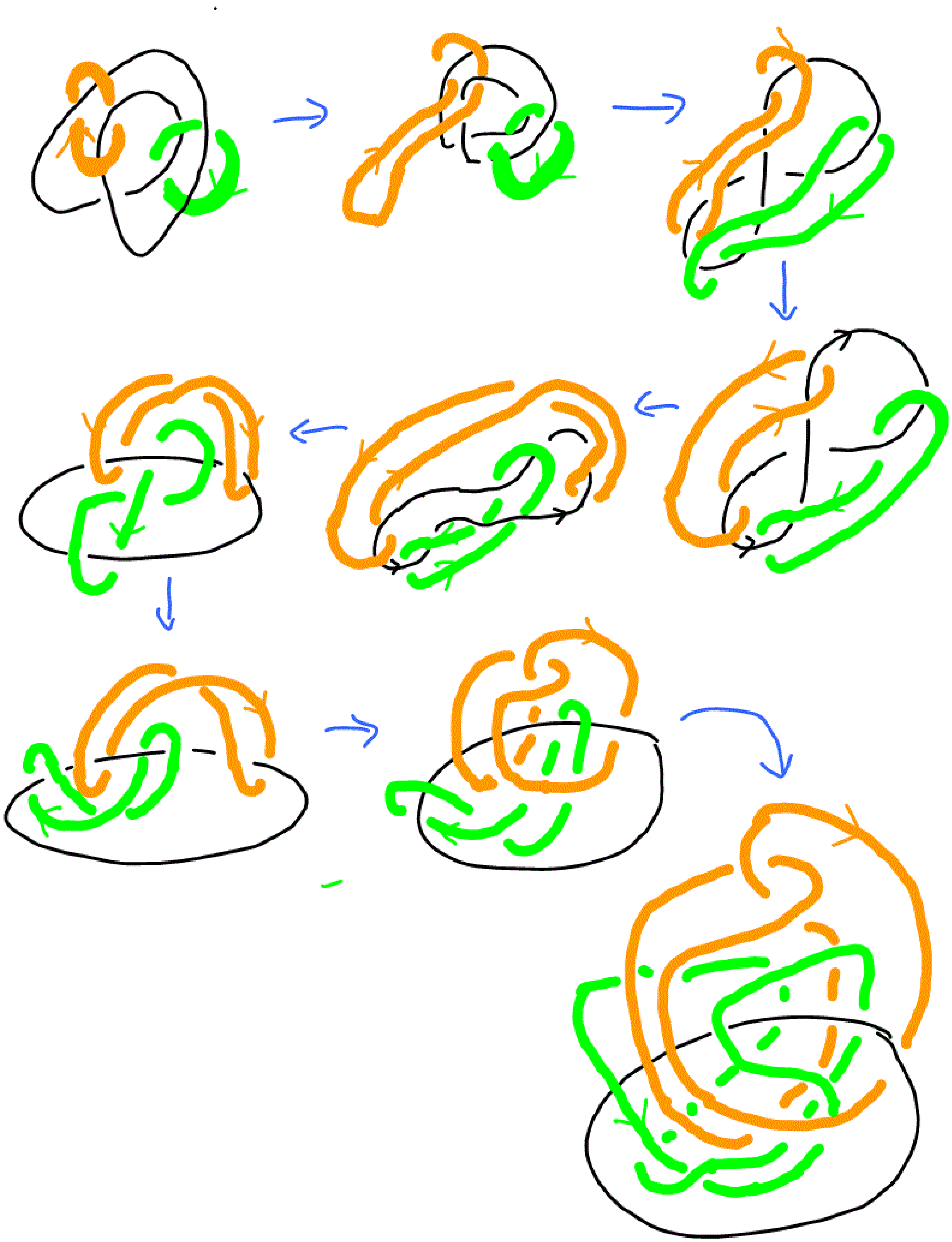
$$S^3 = (S^3 \setminus V) \cup_{\tilde{m} \to m} \tilde{V} \cong (S^3 \setminus V) \cup_{\tilde{m} \to m+\ell} \tilde{V}$$



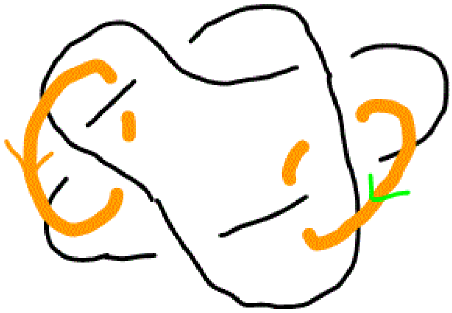
$$(S^3 \setminus S_1) \setminus (V_1 \cup V_2) \cong (S^3 \setminus O_1) \setminus (V_1 \cup V_2)$$

$\cup \tilde{V}_1 \cup \tilde{V}_2$ ($\tilde{m} \to m$, $\tilde{m} \to m$) $\qquad$ $\cup \tilde{V}_1 \cup \tilde{V}_2$ ($\tilde{m} \to m + l$, $\tilde{m} \to m + l$)





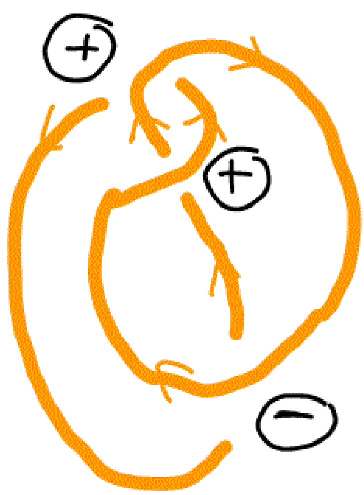

double
cover



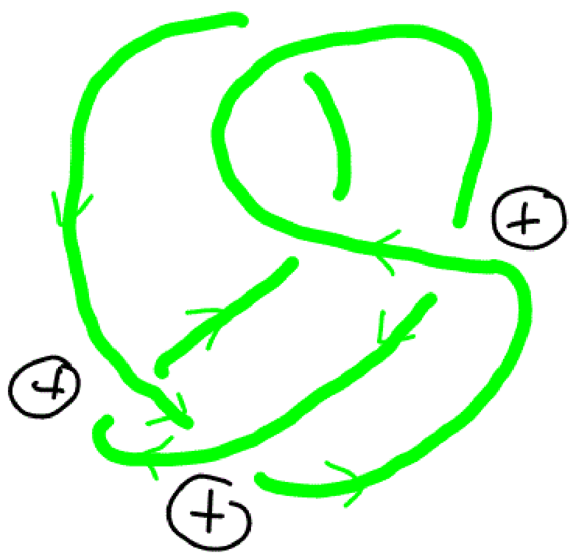
$(S^3 \setminus O_1) \setminus (V_1 \cup V_2)$

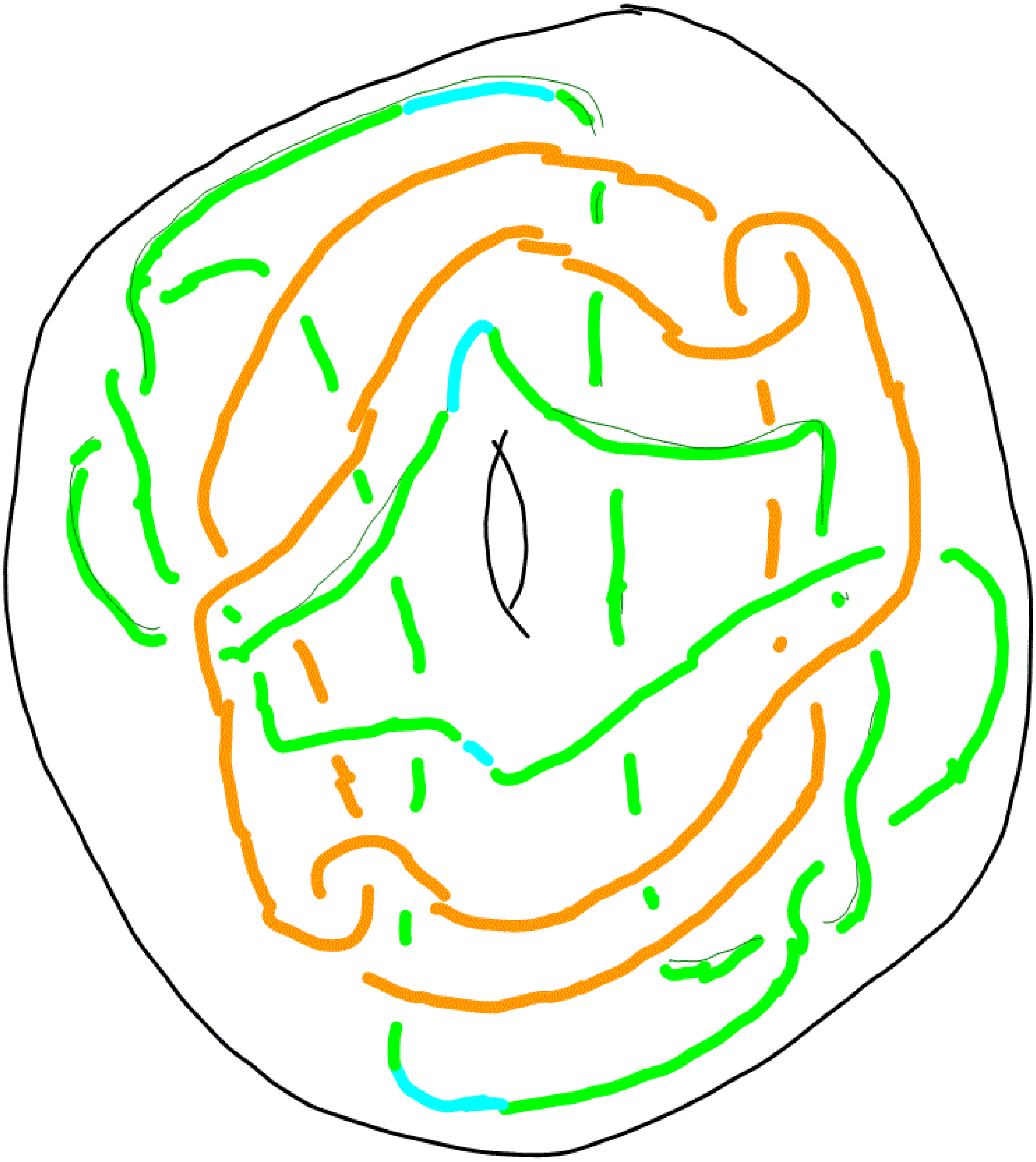
$\cup \tilde{V}_1 \cup \tilde{V}_2$

$\tilde{m} \to m + l$ $\tilde{m} \to m + l$

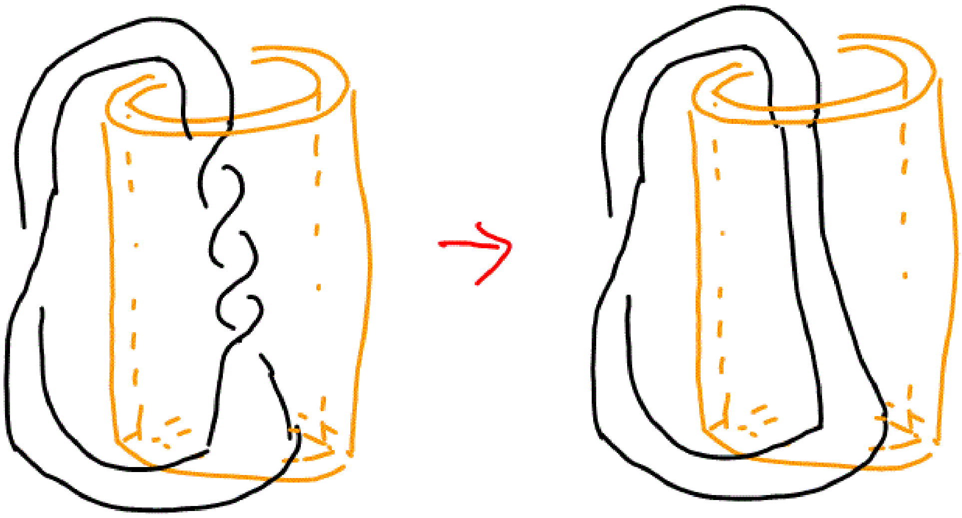


$Wr = +1$





6D Surgery Description of Knots

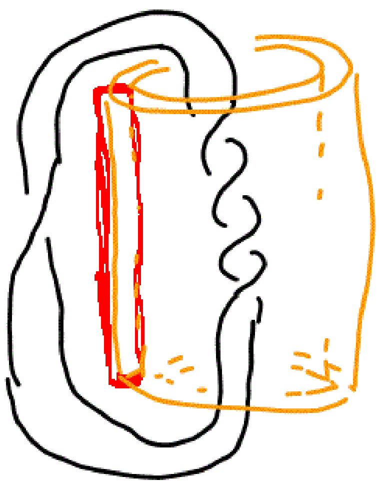


$$(S^3 \setminus V) \cup_{\tilde{m} \to ?} \tilde{V} \cong (S^3 \setminus V) \cup_{\tilde{m} \to ?} \tilde{V}$$

since

$$S^3 \setminus V \underset{\text{twist donut hole } 720^\circ}{\cong} S^3 \setminus V$$

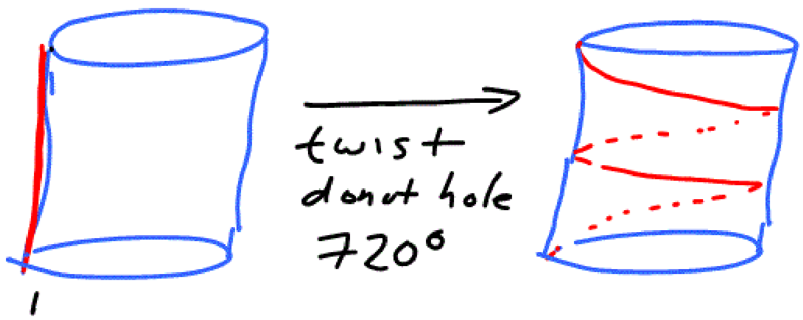
$$\tilde{V} \underset{\substack{id \\ \tilde{m} \to \tilde{m}}}{\cong} \tilde{V}$$



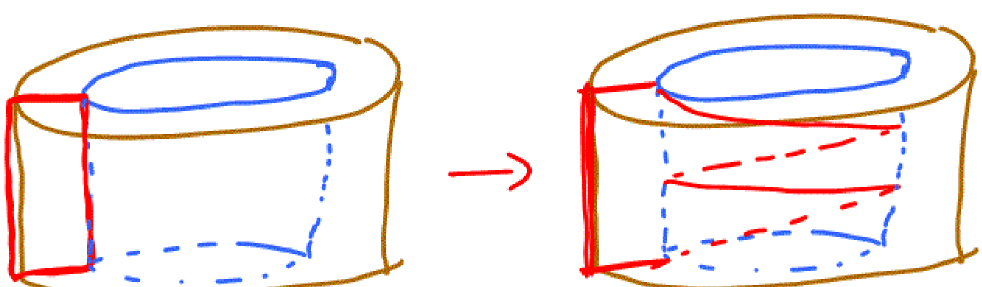
$$(S^3 \setminus V) \cup \tilde{V}$$
$$\tilde{m} \to m$$

$$\tilde{V} \underset{id}{\cong} \tilde{V}$$
$$\tilde{m} \to \tilde{m}$$

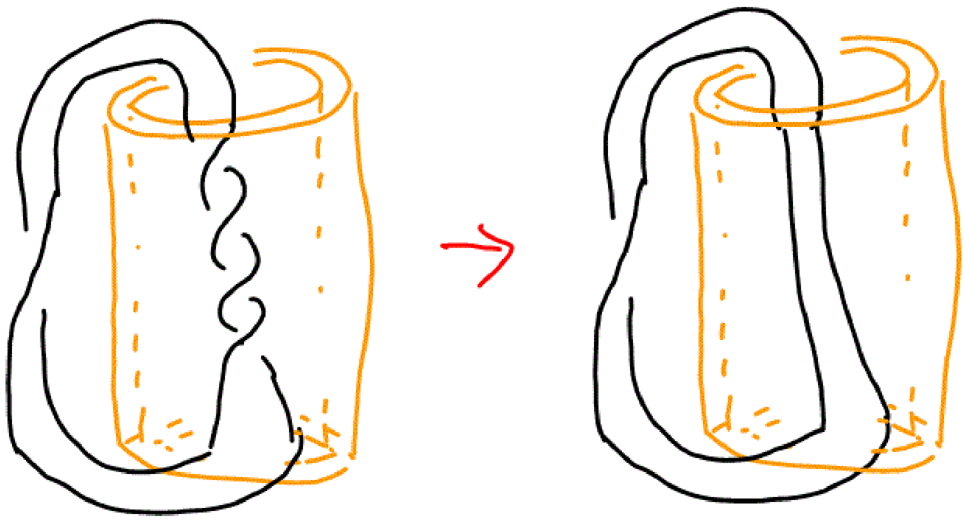
Donut hole



$$\partial(S^3 \setminus V)$$



$$m \longrightarrow m + 2\ell$$

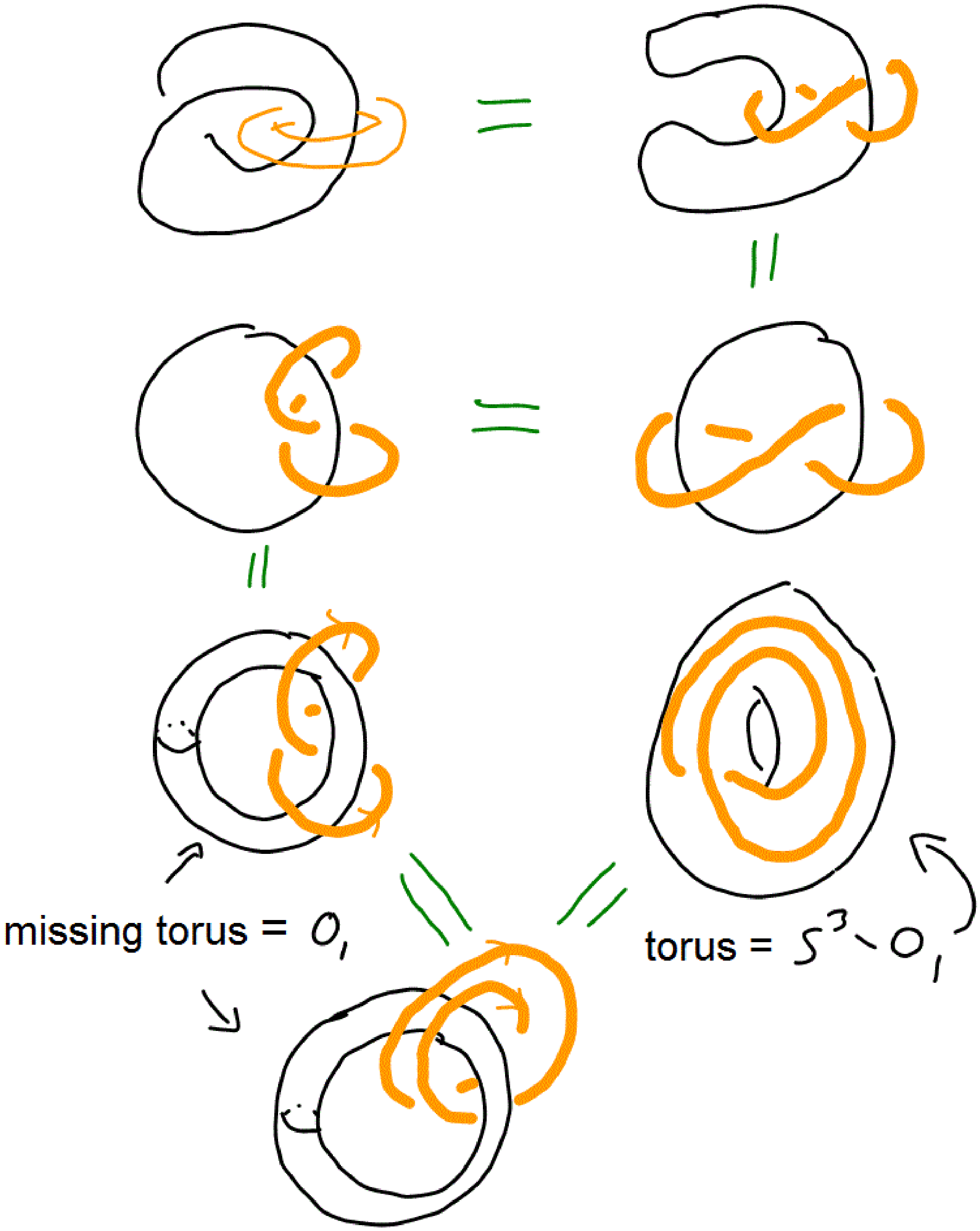


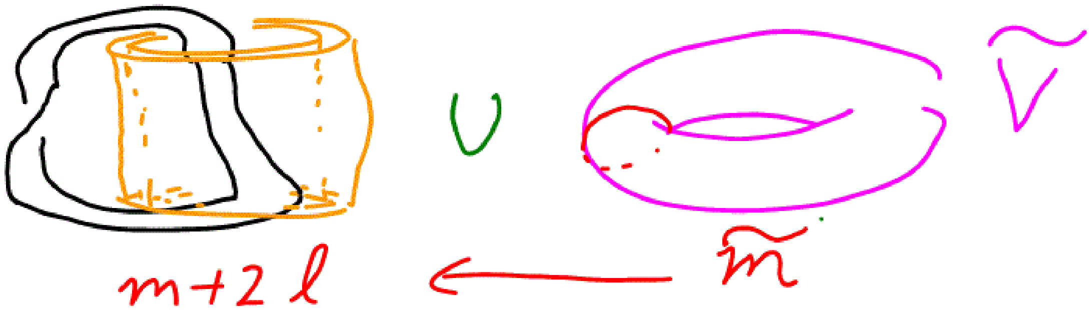
$$(S^3 \setminus V) \cup_{\tilde{m} \to m} \tilde{V} \cong (S^3 \setminus V) \cup_{\tilde{m} \to m+2\ell} \tilde{V}$$

$$S^3 \setminus S_1 = \left[(S^3 \setminus S_1) \setminus V\right] \cup_{\tilde{m} \to m} \tilde{V}$$

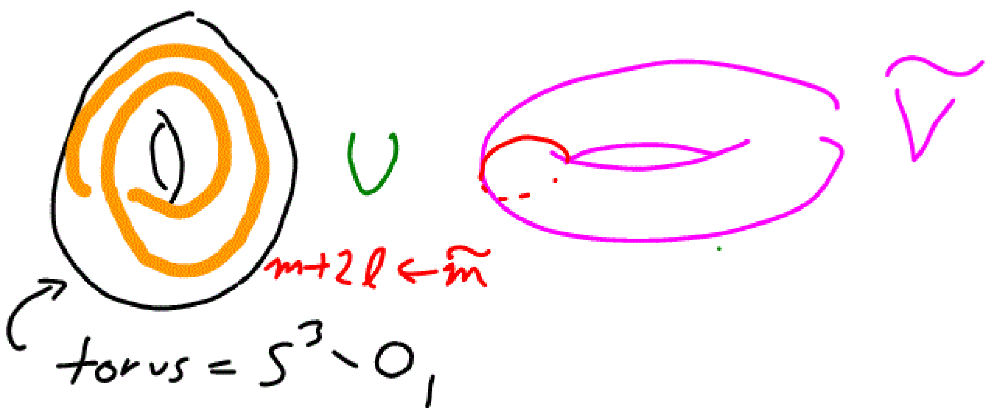
$$= \left[(S^3 \setminus O_1) \setminus V\right] \cup_{\tilde{m} \to m+2\ell} \tilde{V}$$

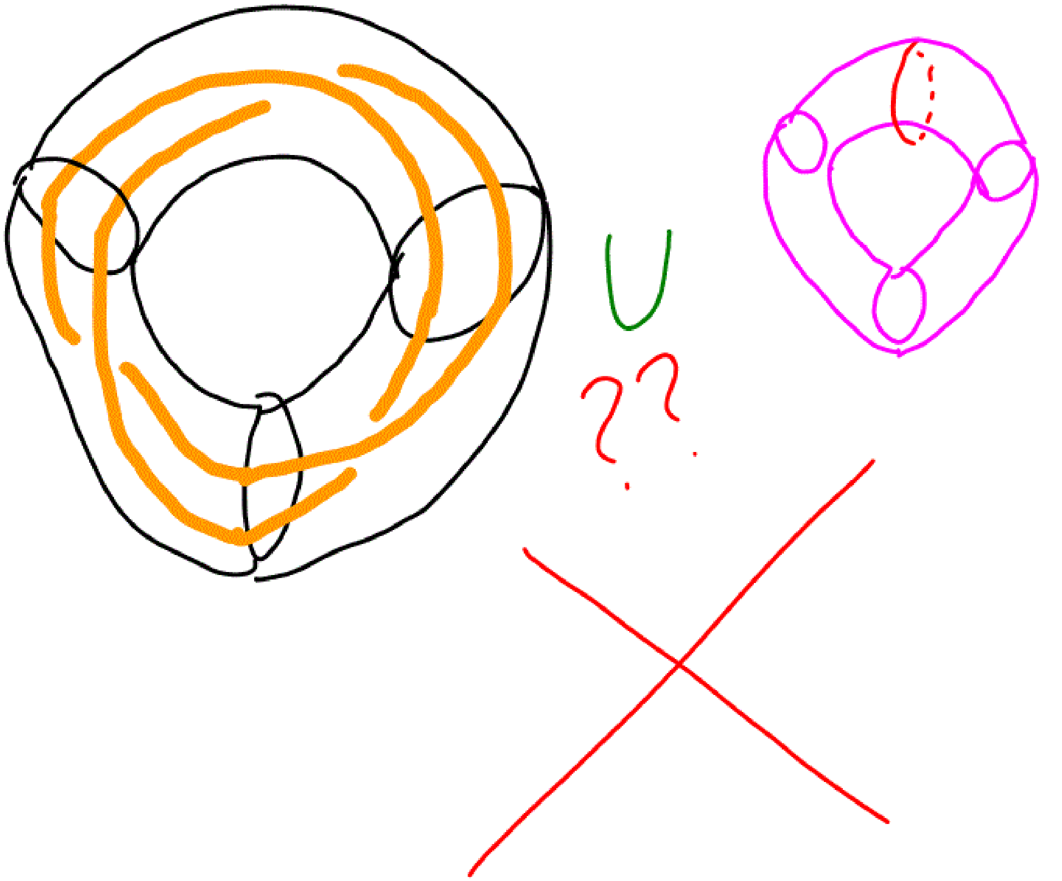
$$= \left[\text{torus} \setminus V\right] \cup \tilde{V}$$


missing torus = O_1
torus = $S^3 \setminus O_1$



$$S^3 \setminus S_1 = \left[(S^3 \setminus O_1) \setminus V \right] \cup_{\tilde{m} \to m+2\ell} \tilde{V}$$

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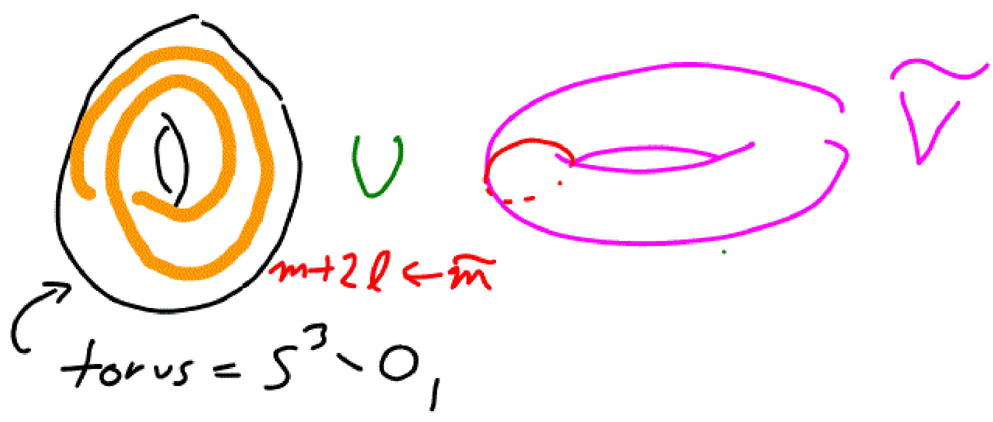
m+2ℓ ← m̃
torus = S³ ∖ O₁
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