Concordances in (3-manifold) × [0,1]
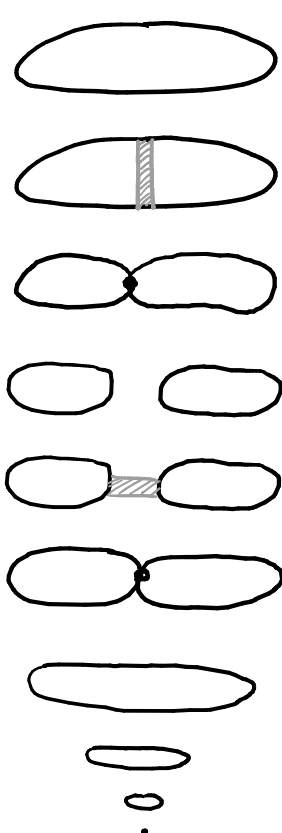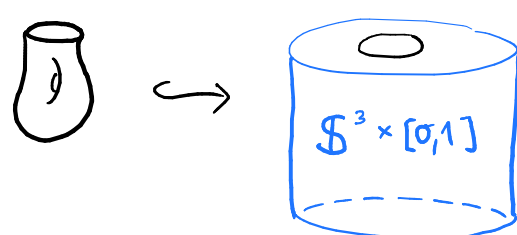
2021-09-07
Oberwolfach 10 min talk
Ben Ruppik (MPIM)

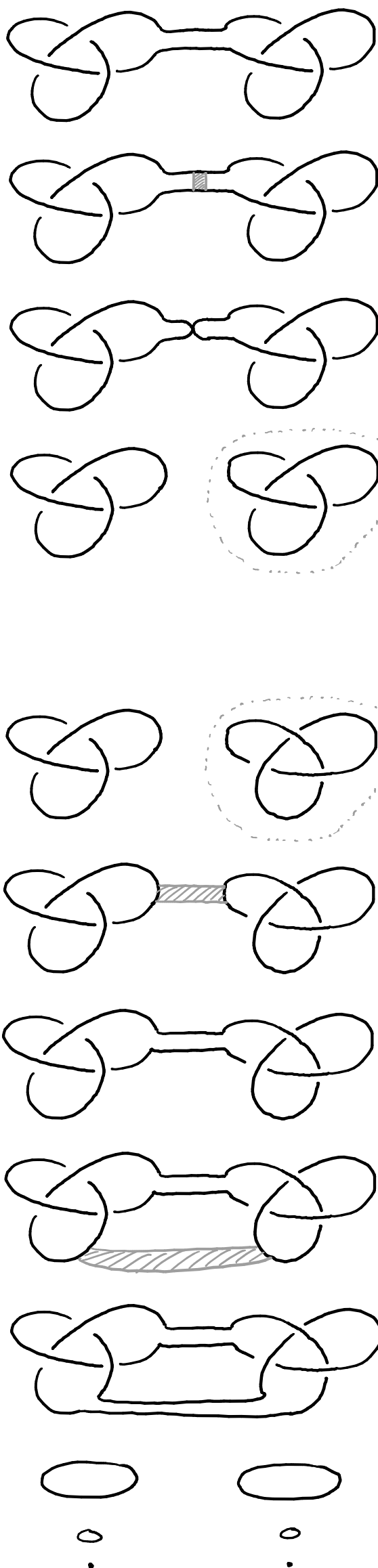Let $N = \mathbb{S}^3$.

This is a "movie" describing a punctured torus with $\partial = $ unknot $\subset \mathbb{D}^3 \subset \mathbb{S}^3$

$\mathbb{S}^3 \times [0,1]$

Let M^3 be a __non-orientable__ 3-manifold

Consider the following "movie" describing a punctured torus with $\partial = $ RHT # RHT $\subset \mathbb{D}^3 \subset M^3$
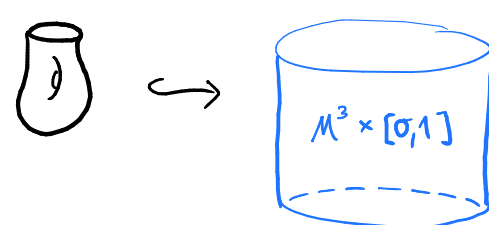
follow an orientation-reversing Loop in M

$M^3 \times [0,1]$

•) (smooth) $(M^3 \times [0,1])$ - genus $g_{M^3 \times [0,1]}^{smooth}(RHT \# RHT) \leq 1$
   ↑ __non__-orientable !!!

•) (smooth) 4-ball-genus $g_{\mathbb{S}^3 \times [0,1]}^{smooth}(RHT \# RHT) = 2$

[22] Find $K^1 \subset \mathbb{D}^3 \subset N^3$, N^3 orientable 3-manifold

with $g_{N^3 \times [0,1]}(K) \underset{???}{\lneq} g_{\mathbb{S}^3 \times [0,1]}(K)$