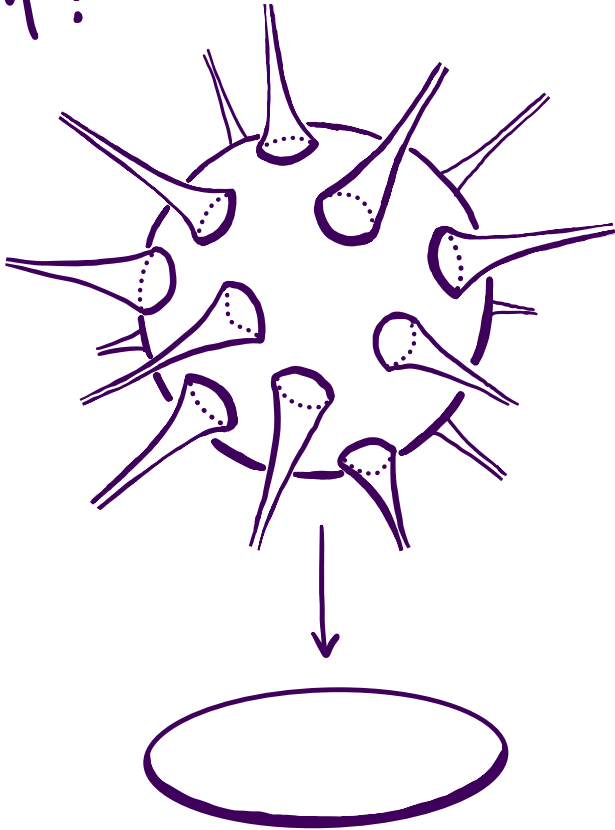


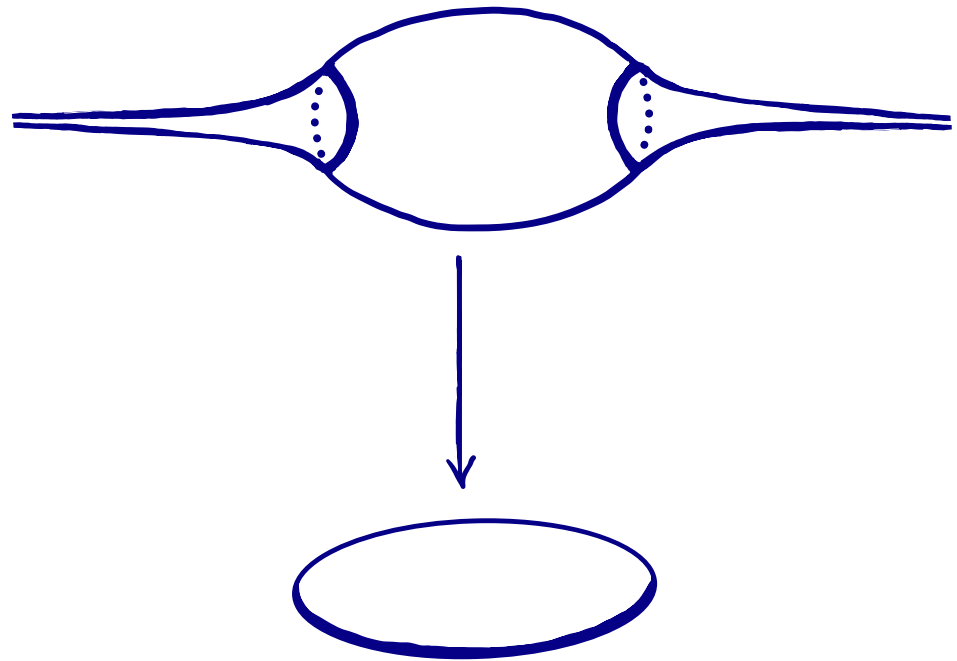
Filling the Ratcliffe-Tschantz hyperbolic 5-manifold — Colby Kelln

↳ [Italiano - Martelli - Migliorini '21] constructs two examples of finite volume hyperbolic 5-manifolds that fiber over the circle.

M^5 :

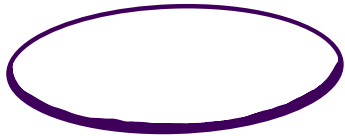
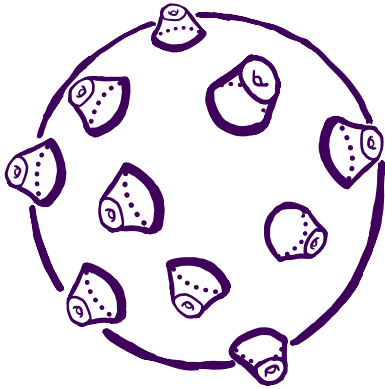


N^5 (AKA Ratcliffe-Tschantz hyp. 5-mfld):



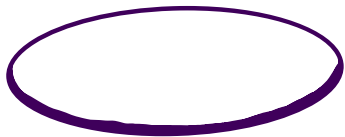
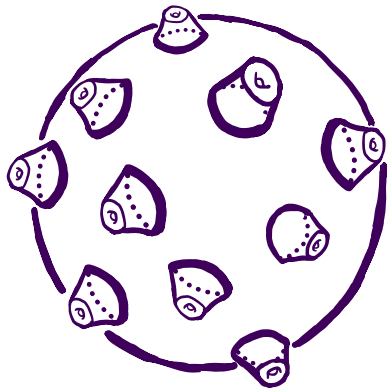
Filling the Ratcliffe-Tschanz hyperbolic 5-manifold — Colby Kelln

\bar{M}^5 (truncated M^5):



Filling the Ratcliffe-Tschanz hyperbolic 5-manifold — Colby Kelln

\bar{M}^5 (truncated M^5):



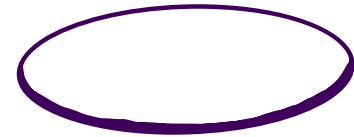
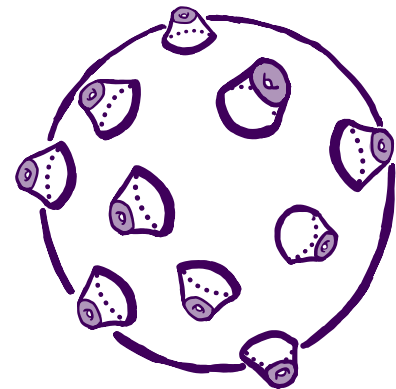
[Fujiwara-Manning '08]
torus cusp filling



yields \hat{M}^5

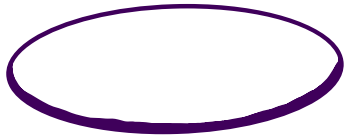
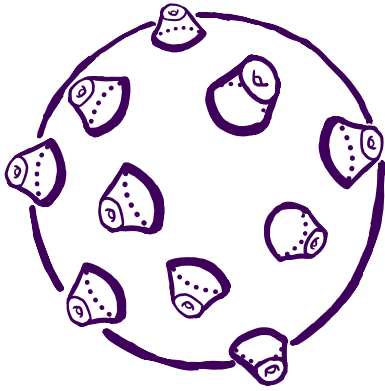
CAT(- κ) pseudomanifold

\hat{M}^5 (filled \bar{M}^5):



Filling the Ratcliffe-Tschantz hyperbolic 5-manifold — Colby Kelln

\bar{M}^5 (truncated M^5):



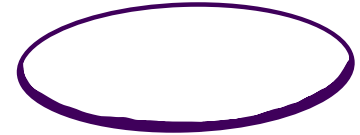
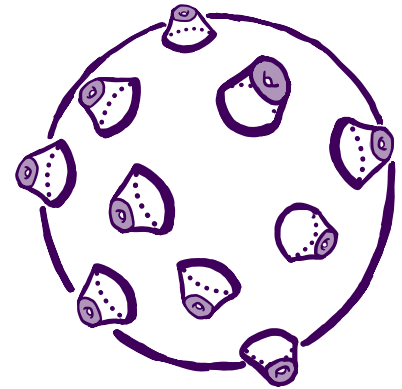
[Fujiwara-Manning '08]
torus cusp filling



yields \hat{M}^5

CAT(- κ) pseudomanifold

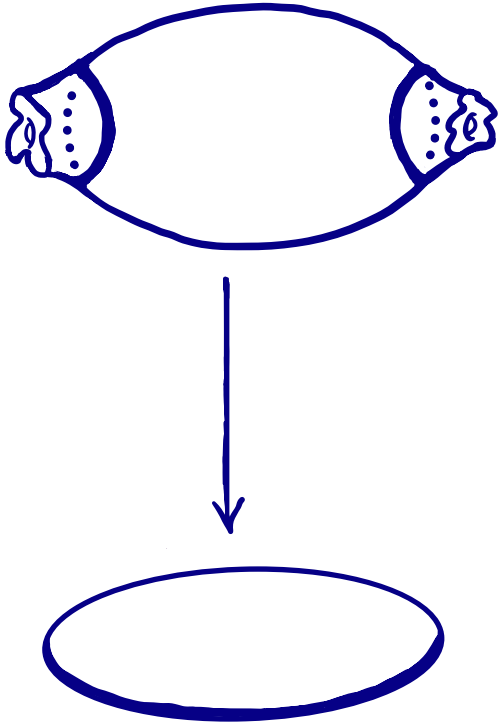
\hat{M}^5 (filled \bar{M}^5):



thrm [Italiano - Martelli - Migliorini '21] \exists hyperbolic group $(\pi_1(\hat{M}))$ with a subgroup $(\pi_1(\text{filled fiber}))$ that is of finite type but is not hyperbolic.

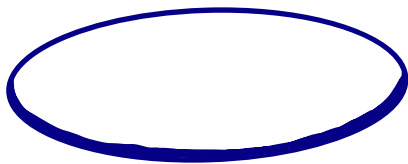
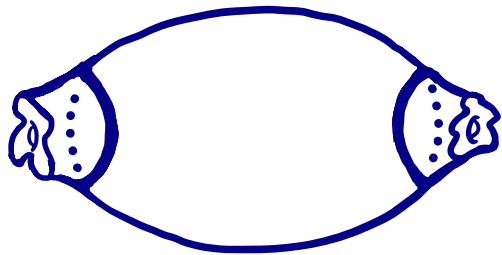
Filling the Ratcliffe-Tschanz hyperbolic 5-manifold — Colby Kelln

\bar{N}^5 (truncated N^5):



Filling the Ratcliffe-Tschanz hyperbolic 5-manifold — Colby Kelln

\bar{N}^5 (truncated N^5):

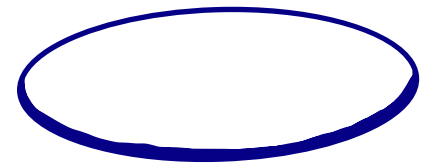
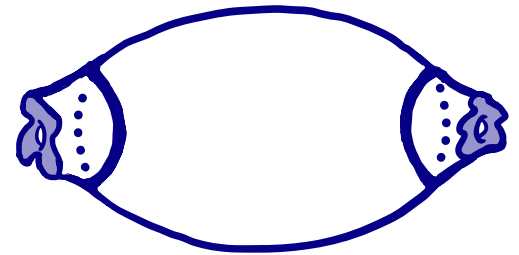


[K]



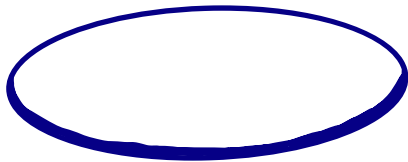
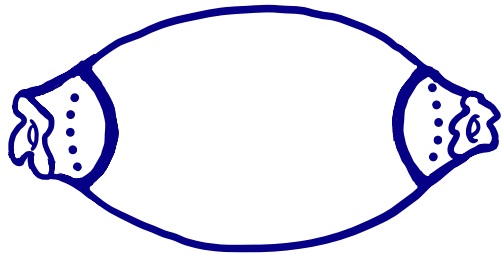
yields \hat{N}^5
CAT(-k) pseudomanifold

\hat{N}^5 (filled \bar{N}^5):



Filling the Ratcliffe-Tschanz hyperbolic 5-manifold — Colby Kelln

\bar{N}^5 (truncated N^5):



[K]

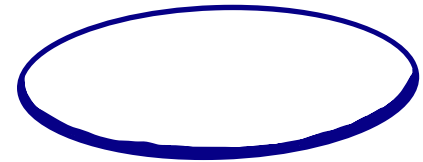
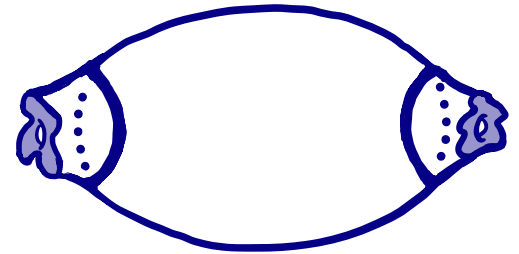
generalized cusp filling



yields \hat{N}^5

CAT(- κ) pseudomanifold

\hat{N}^5 (filled \bar{N}^5):



Future work:

↳ Are $\pi_1(\hat{M})$ and $\pi_1(\hat{N})$ commensurable?

↳ Can I write down a presentation for $\pi_1(\hat{N})$?