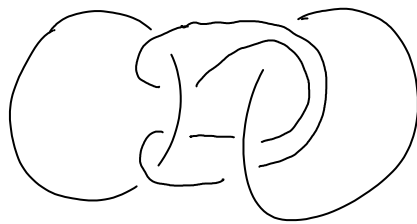


1. The definition of "ribbon 2-knot" is ugly. We want the embedding to extend to the handlebody, but we don't care how.
2. The description using v -knot language seems too "shrank to a skeleton".
3. The singular vertices are a bit ugly.
4. Why not consider more complicated "foams"? Or "surfaces with marked 1-cycles".
5. The relationship with BF theory remains unclear.
6. Likewise, the relationship with configuration space integrals remains unclear.

Question. What's the fundamental reason why a certain 2-knot/link/tangle would not be a ribbon? Must be related to the Borromean rings.



From the Carter-Saito book:

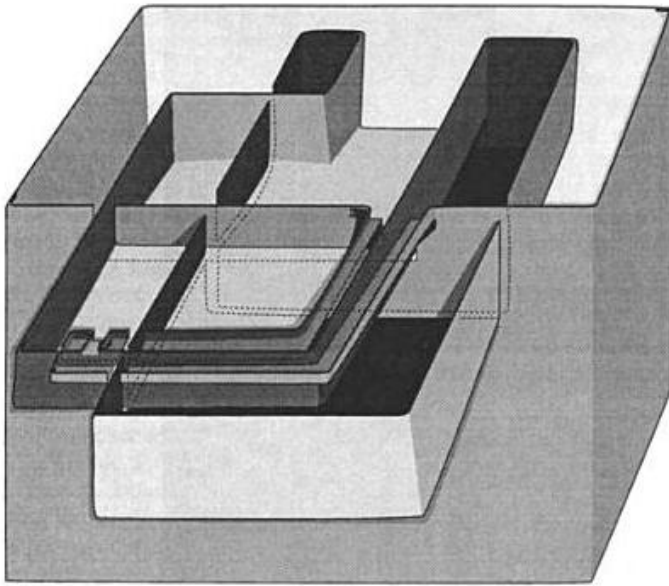


FIGURE 7. A diagram of a surface that has triple points