Short canonical decompositions of non-orientable surfaces

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Suppose that S is a surface and $G \subset S$ is an embedded graph. In many applications, in algorithm design, geometry processing, or even just to represent the embedding, there is a basic task: to cut S into a single disk. When S is orientable, it has long been known how to compute a canonical cutting system that is also "short": each arc of the system runs along each edge of G at most a constant number of times.

In this talk we survey what is known about such cutting problems. We then explain how to obtain a short canonical system when S is non-orientable.

Joint work with: Niloufar Fuladi and Alfredo Hubard.

References

[1] N. Fuladi, A. Hubard and A. de Mesmay. Short topological decompositions of non-orientable surfaces. *38th International Symposium on Computational Geometry (SoCG 2022)*, to appear.