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**Marithania Silvero\*** (marithania@us.es). *Polynomial braid combing.*

Braid combing is a procedure defined by Emil Artin to solve the word problem in braid groups. Despite it is conceptually simple, it becomes impractical when computing concrete cases. In fact, it is well-known that (classic) braid combing has exponential complexity.

In this talk we will use straight line programs to give a polynomial algorithm which performs braid combing. Moreover, this procedure provides the first algorithm which gives a solution for the word problem in braid groups on surfaces with boundary in polynomial time and space.

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