

COUNTING INTERSECTIONS OF NORMAL CURVES

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I will talk about a fast algorithm for counting the number of intersections of two normal curves on a punctured surface that are pulled tight, from their normal coordinates relative to a triangulation. The algorithm allows to deal with mapping class groups of punctured surfaces more efficiently in a sense than by using any finite generating systems. This means the following.

To each finite system of generators one associates a norm which is the length of a shortest word representing the given element. All such norms are equivalent. I am using another way to represent elements to which corresponds a norm, i.e. the presentation record length, that is bounded by the standard word length multiplied by a constant whereas the standard word length is not bounded by a polynomial of the norm. For certain elements like large powers of Dehn twists the word length may be exponentially large compared to the norm. However, the equality decision problem still admits a polynomial-time solution for my presentation.

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The work is supported in part by Russian Foundation for Basic Research (grants no. 10-01-91056-НЦНИ_a and 11-01-00197-a) and the Russian Government (grant no. 2010-220-01-077).