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Jane Gilman* (gilman@rutgers.edu). *Nielsen Transformations and Primitive curve Lengths on Pairs of Pants.*

The fundamental group of a pair of pants is a free group of rank two. A closed geodesic on a pair of pants is a principal primitive if it, together with one other such geodesic, generates the fundamental group. Every such primitive is the image of a simple curve under a series of Nielsen transformations. Its essential self-intersections are those self-intersections that occur along a seam of the pair of pants. The conjugacy class of the primitive is determined by a rational number r with a continued fraction expansion whose entries give a formula for the number of essential self-intersections and are computed using the Non-Euclidean Euclidean algorithm.

A number of length inequalities are obtained including upper and lower bounds on the hyperbolic length of any such primitive in terms of the essential self-intersection numbers, variants on the upper and lower bounds for the translation length of any such primitive using the entries in the continued expansion and the translation length of the shortest curves (which the discreteness algorithm always finds) and the longest seam length is expressed as a limit involving the entries in the continued fraction r and hyperbolic distance.

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