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Mladen Bestvina, Thomas Church* (tchurch@math.uchicago.edu) and **Juan Souto**. *The point-pushing subgroup of the punctured mapping class group is not realizable by diffeomorphisms.*

The mapping class group of a surface Σ with one marked point z fits into the short exact sequence

$$1 \rightarrow \pi_1(\Sigma, z) \rightarrow \text{Map}(\Sigma, z) \rightarrow \text{Map}(\Sigma) \rightarrow 1.$$

The kernel is known as the point-pushing subgroup, since its elements are obtained by “pushing” the marked point along loops in the fundamental group of Σ . By using Milnor’s inequality for the Euler number of a flat vector bundle over a surface, we show that the point-pushing subgroup cannot be realized by diffeomorphisms of Σ fixing z . (Received September 16, 2008)