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 $\Sigma$ 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 $\Sigma$. 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 $\Sigma$ fixing $z$. (Received September 16, 2008)