Matt Clay and Caglar Uyanik* (caglar.uyanik@yale.edu). *An atoroidal subgroup alternative for Out($F_N$).

We prove an analog of Ivanov’s subgroup alternative theorem for mapping class groups in the Out($F_N$) setting. Precisely, we show that every subgroup $H$ of Out($F_N$) either contains an atoroidal element or a finite index subgroup $H'$ of $H$ fixes a nontrivial conjugacy class in $F_N$. The techniques involve hyperbolic geometry, dynamics and ergodic theory. (Received August 28, 2018)