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**Kasra Rafi\*** (rafi@math.ou.edu) and **Matt Clay**. *Essential tori and Dehn twists in Outer space*. Preliminary report.

For a surface  $S$ , a Dehn-twist on  $S$  is an element of mapping class group of  $S$  that has a representative with support in a neighborhood of a simple closed curve. Similarly, if  $M$  is the connected sum of  $n$  copies of  $(S^1 \times S^2)$ , a Dehn-Twists on  $M$  is an element of the mapping class group of  $M$  that has a representative with support in a neighborhood of an essential torus.

The fundamental group of  $M$  is the free group  $F_n$  and the mapping class groups of  $M$  is closely related to the group  $\text{Out}(F_n)$  of outer automorphisms of  $F_n$ . We study subgroups of  $\text{Out}(F_n)$  generated by Dehn-twists by examining the different types of topological intersections between the associated tori. We prove a generalization of a theorem of Thurston in this setting. (Received September 19, 2011)