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**Carolyn Abbott\*** ([abbott@math.columbia.edu](mailto:abbott@math.columbia.edu)), **Nick Miller** and **Priyam Patel**. *Actions of big mapping class groups on the arc complex.*

Given a finite-type surface (i.e., one with finitely generated fundamental group), there are two important objects naturally associated to it: a group, called the mapping class group, and an infinite-diameter hyperbolic graph, called the curve graph. The mapping class group acts by isometries on the curve graph, and this action has been extremely useful in understanding the algebraic and geometric properties of mapping class groups. One particularly important class of elements of the mapping class group are those which act as loxodromic isometries of the curve graph; these are called “pseudo Anosov” elements. Given an infinite-type surface with an isolated puncture, one can associate two analogous objects: the so-called big mapping class group, and the (relative) arc graph. In this talk, we will consider the action of big mapping class groups on the arc graph, and, in particular, we will construct an infinite family of “infinite-type” elements that act as loxodromic isometries of the arc graph, where an infinite-type element is one which is not supported on any finite-type subsurface. This is joint work with Nick Miller and Priyam Patel. (Received January 27, 2020)