1155-57-130 **Kenneth Bromberg**, **Autumn Kent*** (kent@math.wisc.edu) and **Yair Minsky**. *New theorems on Dehn filling, drilling, and geometric inflexibility.* Preliminary report.

Thurston's Hyperbolic Dehn Filling Theorem tells us that all but finitely many Dehn fillings of a cusp on a hyperbolic manifold are hyperbolic. The universal hyperbolic Dehn Filling Theorem of Hodgson and Kerckhoff tells us that if we normalize the cusp cross section to be a unit area flat torus, then any filling slope of length greater than 8 will produce a hyperbolic Dehn filling. The Drilling Theorem of Brock and Bromberg further tells us that these hyperbolic fillings don't disturb the geometry much away from the cusp.

We prove a new universal hyperbolic Dehn Filling Theorem that retains the geometric control of Brock–Bromberg but allows for filling slopes of small normalized length. We trade Hodgson and Kerckhoff's normalized length constraint for constraints on the actual length and the volume growth of the cusp.

The geometric inflexibility theorems of McMullen and Brock–Bromberg tell us that the effect of a quasiconformal deformation of a geometrically finite Kleinian group decays exponentially as you move deeper into the convex core. These theorems are very useful in the convex cocompact setting, but don't get a lot of mileage in the presence of rank-1 cusps. Our Filling Theorem provides new inflexibility theorems that are insensitive to this presence. (Received January 07, 2020)