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Taylor. *Counting conjugacy classes in $Out(F_r)$: Groups rebelling against dynamics.*

It is well known (due to Margulis, for example) that in a classical hyperbolic dynamical system, the number of closed curves of a bounded length increases exponentially with respect to the bound on the length of the curves. In 2011 Eskin and Mirzakhani proved that the same holds for the moduli space of a closed surface. In joint work with Ilya Kapovich, we prove that the outer automorphism group of the free group (and consequently the moduli space of graphs) exhibits a new behavior where this growth rate is in fact double exponential. To our knowledge, this is the only known example of such behavior. (Received August 14, 2019)