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Anne M. Ho* (ho@math.colostate.edu). *Counting Artin-Schreier Curves over Finite Fields*. Preliminary report.

A number of authors have considered the weighted sum of various types of curves with a certain genus g over a finite field $k := \mathbb{F}_q$ of a specific characteristic. These include elliptic curves (Howe), hyperelliptic curves (Van der Geer, Van der Vlugt), and Artin-Schreier curves (Cardona, Nart, Pujolàs, Sadornil). We denote this weighted sum as $\sum_{[C]} 1/|\text{Aut}_k(C)|$, where the sum is over k -isomorphism classes of the curves and $\text{Aut}_k(C)$ is the automorphism group of C over k . We extend the work of these authors by considering a related weighted sum for Artin-Schreier curves with a given genus g over fields of any characteristic p . We will discuss our results and methods of counting, which include looking at ramification divisors, finding associated rational models $y^p - y = u(x)$, and examining the actions of $\text{PGL}_2(k)$ on the models. In addition, we will discuss the geometric connections to the moduli space of Artin-Schreier covers. (Received August 30, 2014)