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Alexander Carl Mueller* (amuell@umich.edu), 111 North Seventh Street Apartment 2, Ann Arbor, MI 48103. *Zeta Functions of Artin-Schreier Curves via Representations of S_n .*

I will outline an approach to counting rational points on an Artin-Schreier curve X (associated to an equation of the form $y^p - y = f(x)$) involving Weil restriction of the polynomials $\text{Tr}_n(f(x))$. This construction produces an $n - 1$ dimensional variety Y_n equipped with an action of S_n . I will show how to compute the decomposition of $H^{n-1}(Y_n)$ as an S_n representation (by studying a related Fermat variety) and indicate how this information can be used to refine the Weil bound estimate for $|X(\mathbb{F}_{p^n})|$. In addition, I will explain how a similar approach can be used to compute the number of rational points modulo a certain p^v in terms of Jacobi sums. (Received September 24, 2012)