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Yih Sung* (ysung26@wisc.edu), Department of Mathematics, Van Vleck Tower 480 Lincoln Dr., Madison, WI 53706. *Rational Points over Finite Fields on A Family of Higher Genus Curves And Hypergeometric Functions.*

In this paper we investigate the relation between the number of rational points over a finite field \mathbb{F}_p^n on a family of higher genus curves and their periods in terms of hypergeometric functions. For the case $y^\ell = x(x-1)(x-\lambda)$ we find a closed form in terms of hypergeometric functions associated with the periods of the curve. For the general situation $y^\ell = x^{a_1}(x-1)^{a_2}(x-\lambda)^{a_3}$ we show that the number of rational points is a linear combination of hypergeometric series, and we provide an algorithm to determine the coefficients involved. (Received September 04, 2016)