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Yuri G. Zarhin* (zarhin@math.psu.edu), Pennsylvania State University, Department of Mathematics, University Park, PA 16802. *Eigenvalues of Frobenius endomorphisms of Abelian varieties over finite fields.*

Let X be a positive-dimensional abelian variety over a finite field of characteristic p , Fr_X the Frobenius endomorphism of X , and $P_X[t]$ the characteristic polynomial of Fr_X , which is a monic polynomial with integer coefficients. Its roots are eigenvalues of Fr_X with respect to its action on the ℓ -adic Tate module of X (for all primes $\ell \neq p$). We discuss multiplicative relations between eigenvalues of Fr_X . As an application we obtain the following result.

Theorem. Let g be a positive integer. Then there exists a positive integer $N = N(g)$ that enjoys the following properties.

Let X be a g -dimensional abelian variety over a finite field k such that there exist a positive integer n and a prime $l \neq \text{char}(k)$ such that the self-product X^n of X carries an exotic l -adic Tate class.

Then the self-product X^N of X carries an exotic ℓ -adic Tate class for all primes $\ell \neq \text{char}(k)$.

Recall that a Tate class is called exotic if it cannot be presented as a linear combination of products of divisor classes. (Received September 06, 2020)