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Quadratic forms and curves on abelian surfaces

The Néron-Severi group $\text{NS}(A)$ of an algebraic variety A is the group of divisors modulo algebraic equivalence. When $A = E_1 \times E_2$ is a product of two elliptic curves, there is a correspondence between elements of the Néron-Severi group and quadratic forms. In this talk, we will describe the correspondence and explain how geometric properties of a divisor correspond to arithmetic properties of the associated quadratic form. As an application, we will determine when a product $E_1 \times E_2$ contains a smooth embedded curve of any given genus, and when such a product embeds in \mathbb{P}^4 . This is joint work with Ari Shnidman.