

Subvarieties in Abelian Variety

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Setting:

- A/\mathbb{C} : an abelian variety of dim n
- $Z \subset A$: a (nondegenerate) subvariety of dim r
 Z is a curve C in our talk.

Goal

- *Construct a family of subvarieties in A .*
- *Find their dimension and homology class.*

Example (Jacobian case)

When C is a smooth projective curve over \mathbb{C} of genus $g \geq 2$,

$$A := \text{Jac}(C)$$

the Jacobian of C

$$\text{AJ}_C : C \hookrightarrow A$$

Abel–Jacobi map

Example (Prym case)

When $h : C \rightarrow C'$ is an unramified double cover of smooth projective curves, we can define

$$A := \text{Prym}(C/C')$$

the Prym variety of h

$$\text{AP}_{C/C'} : C \rightarrow A$$

Abel–Prym map

We need to assume C is non-hyperelliptic so that $\text{AP}_{C/C'}$ is injective.