

## Applying pairings in isogeny crypto

### why pairings at all?

#### scheme maturity

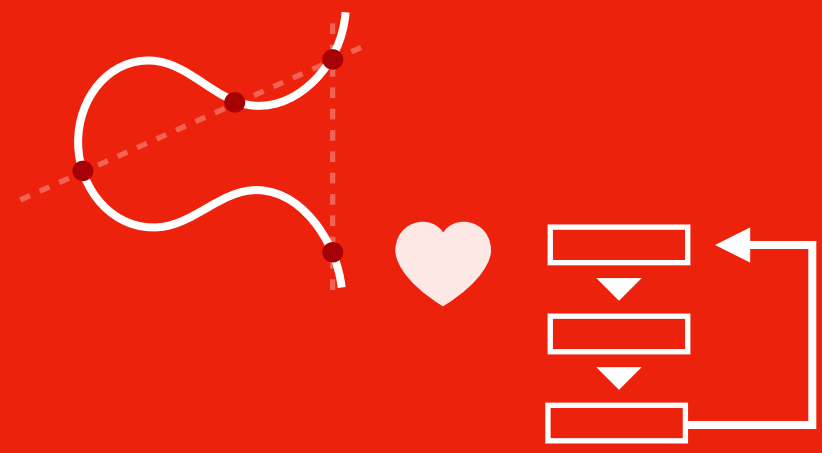
- classical security well understood
- quantum security well understood
- fast, constant-time implementation
- deterministic and dummy-free

#### CSIDH's maturity?

- ✓ classical security well understood
- ? quantum security well understood
- ? quite slow constant-time
- ✗ *very slow* deterministic, dummy-free

how do we achieve fast high-security CSIDH?  
*constant-time, deterministic, dummy-free*





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**previously**



**with pairings**



**to do**

- add **seed** for torsion points in key
- **slow** verification of torsion points
- **slow** group action due to dummy-free