2

Speeding-up general pairings

NextBit(r)

Dbl(T, f, Q)

Add(T, f, P, Q)

---

pairing crypto

Choose a "nice" curve E,
Choose a "nice" prime p,
to do **pairings** with

Computing $e(P, Q)$
is quite **fast**!

💔

isogeny crypto

Choose a "nice" curve E,
Choose a "nice" prime p,
to do **isogenies** with

These are mediocre curves,
and definitely bad primes,
to do **pairings** with

Computing $e(P, Q)$
seems way too **slow**!

✔

core idea

For $P \in E(\mathbb{F}_p)$ and $Q \in E^t(\mathbb{F}_p)$,
don't use curve arithmetic
but pairing $e(P, Q)$ to get
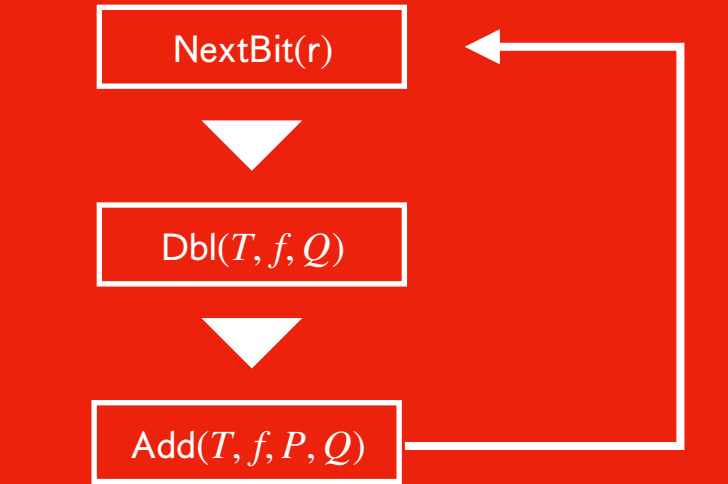overlap in orders!

MAIN RESULTS

1 make pairings great again

▶

2 apply **core idea**

▶

3 faster isogeny algorithms!

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first this

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