



①

Target thread

Microarchitectural state

Memory state

Attacker thread

Enter a syscall

Read(X) = 42
Snapshot X

X=42

Speculation start

②

Illegal Write(X, 0)

③

④

LSQ

⑤

Read(X) = 0
from LSQ

⑥

Use X = 0
Leak secret into
side-channel

Side-
channel
e.g. cache

⑦

Speculation end

⑨

Roll back read

Roll back write

⑧

Leak secret from
side-channel

⑩