

MIRAGE

- Shared caches \Rightarrow Side channel based attacks
- Achieve full-associativity while retaining practical set-associative lookups.
 - ↳ Decouples placements and replacements
- Uses pointers to connect tag to data.
- *Poum + Poule* doesn't require a shared memory?
Doubt:
- Mapping inspired by V-Way.
- Set Associative Eviction (SAE):
 - * A valid tag from the same set needs to be evicted to accommodate the incoming line.

→ Load-Aware skew selection Policy

↳ Load-Aware Hashing

↳ Choose the skew with the most invalid tag-entries.

V-Way	Mirage
→ 100% extra tags	75% extra tags
→ only 1 tag per set?	2 tags per set ?

→ Am not sure about this!

How to handle if $< 75\%$ extra tags?

→ Luckoo Hashing!

→ global eviction to prevent conflict-based attacks

→ 2 skewed tag mimic the benefits of fully

Associative Cache.

→ Load balancing policy to make sure there is always extra invalid tags -

→ Cuckoo evictions if $< 75\%$ tag

→ $O(n^2)$ eviction set discovery → CEASER → $O(n)$ discovery

↓
Scatter Cache
CEASER-S.

↓
Probabilistic
Eviction Set
Discovery
(partial)

Scatter Cache →

← Solution ←
Completely prevent
Set-Associative
Evictions (SAE).

luckoo Relocation:

- If both skews are full, a line is selected from either of these sets & relocated to its alternative location in other skew.
- This creates an invalid tag in its original place

3 Relocation is good enough!