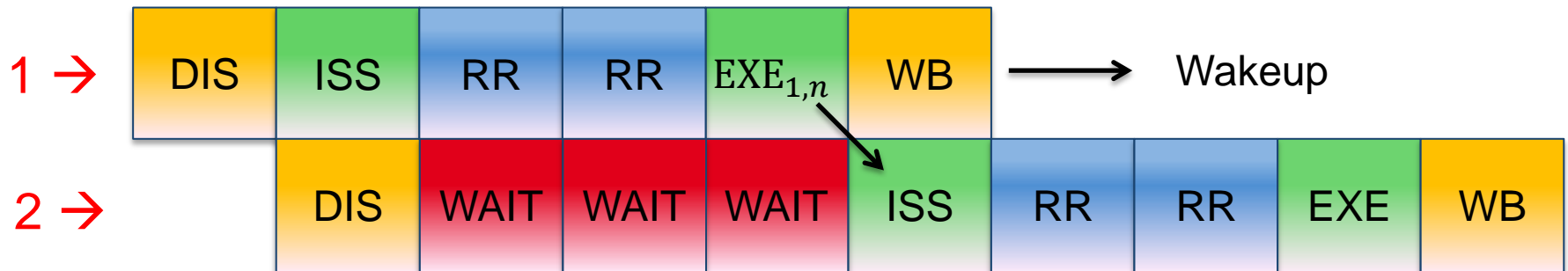


Cost-Effective Speculative Scheduling in High Performance Processors

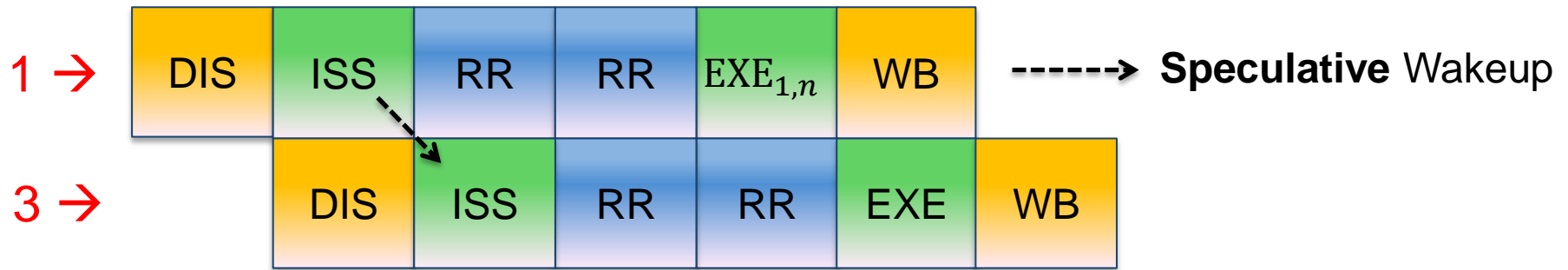
Arthur Perais, André Seznec, Pierre Michaud, Andreas Sembrant, Erik Hagersten

Speculative Scheduling – The Good

1. Issue a **variable-latency** instruction.
2. **Wait** for the result to issue a dependent, or...

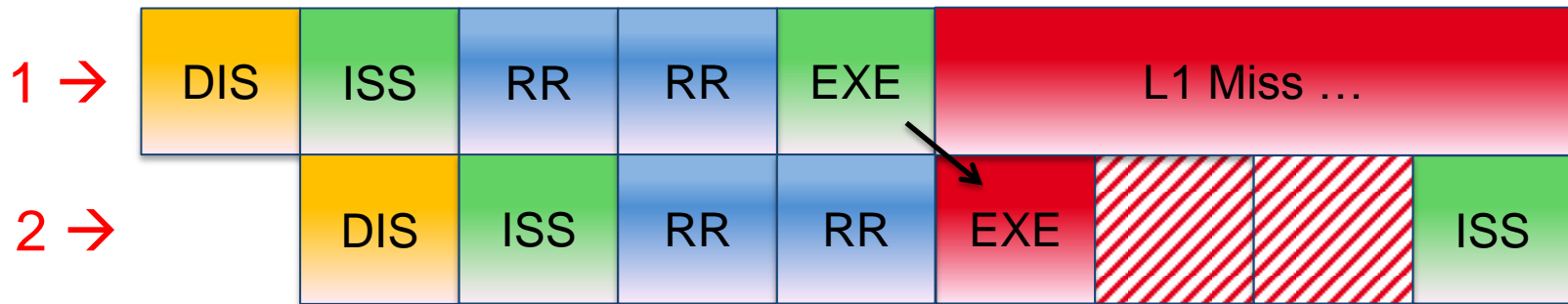


3. ...issue a dependent **speculatively** to avoid bubbles.



Speculative Scheduling – The Bad

1. Producer has **unexpected** latency (e.g., L1 miss).
2. Consumer read wrong value: **re-execute (replay)**.



➤ Today's talk (4B, 4pm):

- How is replay done as far as we know*.
- Two main causes of replays: L1 miss and L1 bank conflicts.
- Very simple ways to reduce replays.

*not much