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1. []
2. [] SP-PU-L1-DMA []
 1. []
 2. []
 3. []
 4. LD/ST [] fence []
3. Launch [] fork
 1. []
4. launch/signal/wait:join
 1. launch pu instruction: write_back_id local_id
 1. write_back atomic add/sub
 2. wait instruction: local_id
 1. local_id GE LE counter
 3. wait remote instruction: remote_id
 1. local_id GE LE counter
5. [] & []
 1. []
 2. []
 1. [] scale
 2. 1D/2D []
 3. [] Reduce []
 1. L3 Atomic
 3. []
 4. []
 1. leading tailing latency
 1. LD/ST inflight delay [] DMA Delay
 1. ping-pong
 2. pipeline
 2. kernel [] latency
 1. kernel []
 3. kernel [] gap
 1. kernel []
 2. [] fusion
 2. [] ready [] fence []
 1. []
 1. m-barrier
 3. []

MAC

1. Vector []
2. [] VR [] RO WO []
3. [] Vector []
4. [] VR []
5. Vector []

Software

1. []

ISA

1. []
 1. RV64i
2. []
 1. VLD VST VMUL VADD REDUCE_ADD REDUCE_MAX REDUCE_MIN VMUL_REDUCE_ADD
 2. MLD MST
3. []
 1. GEMM
 1. [] / [] 128 [] = 7 [] + 3 [] = 10 []
 2. [] 7 []
 3. Opcode
4. fence
 1. L1 cache line []
5. VR
 1. [] VR data hazard [] VR []
 1. []
 2. [] VR [] [] rename ing [] bank []
 3. [] VR count []
 1. LD ST [] []
 1. []
 2. [] GEMM [] LD []
 3. [] ST []
6. L1
 1. [] cache line
 2. **cache line** []
 3. [] **L1 CacheLine** []
 1. [] **Load** [] **L1 cache line** []
 2. [] **cache line** [] **mask** []
 3. [] **L1-L1** []
 4. [] **MNK** []
7. DMA

1. ROM Launch Kernel kernel
 2. cmd
 3. DMA kernel linear copy kernel launch
1. launch constructor
 8. 128 RV64
 - 9.
 10. / RiscV-V
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