

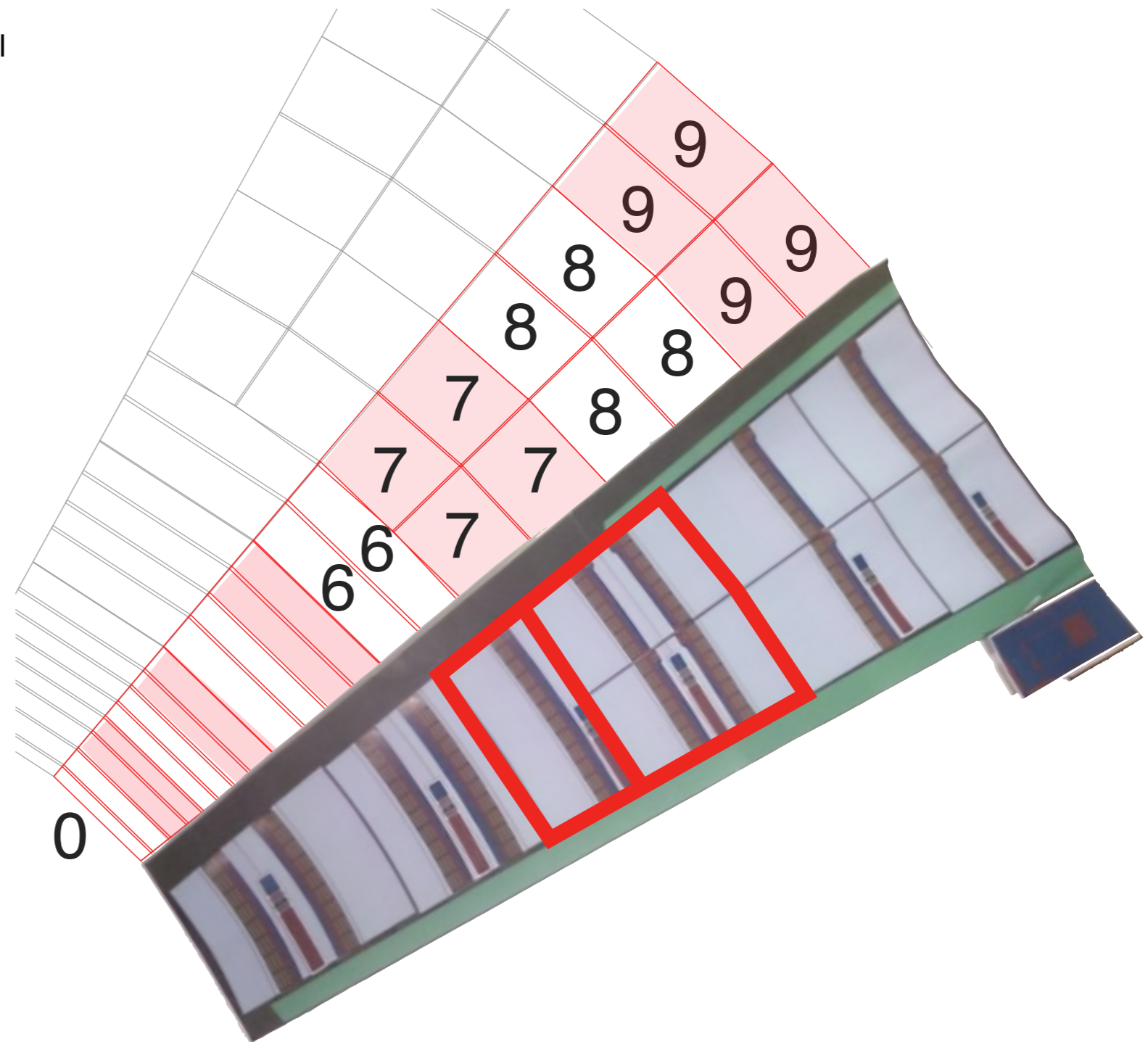
L1Stoat HCC Star emulation latency

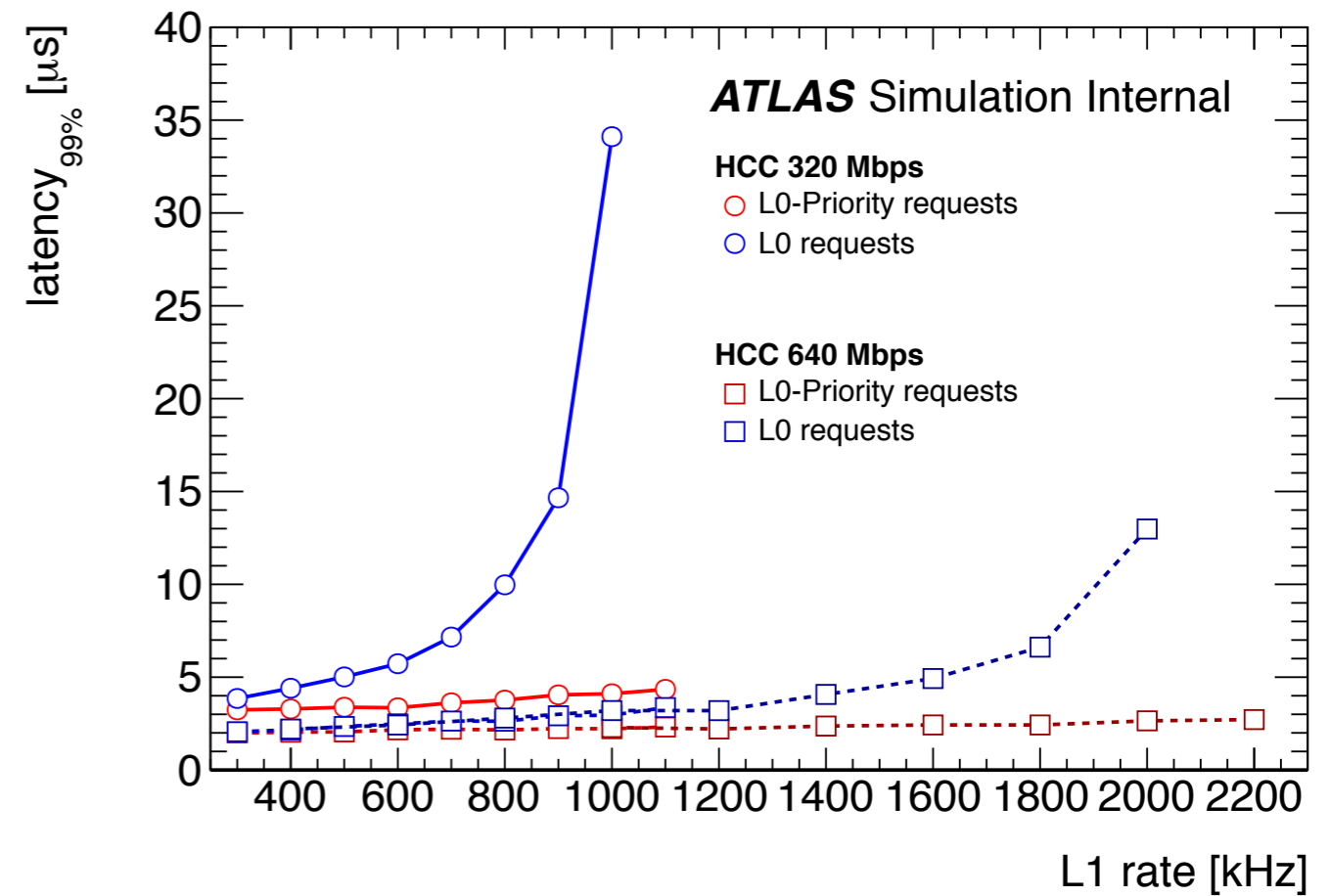
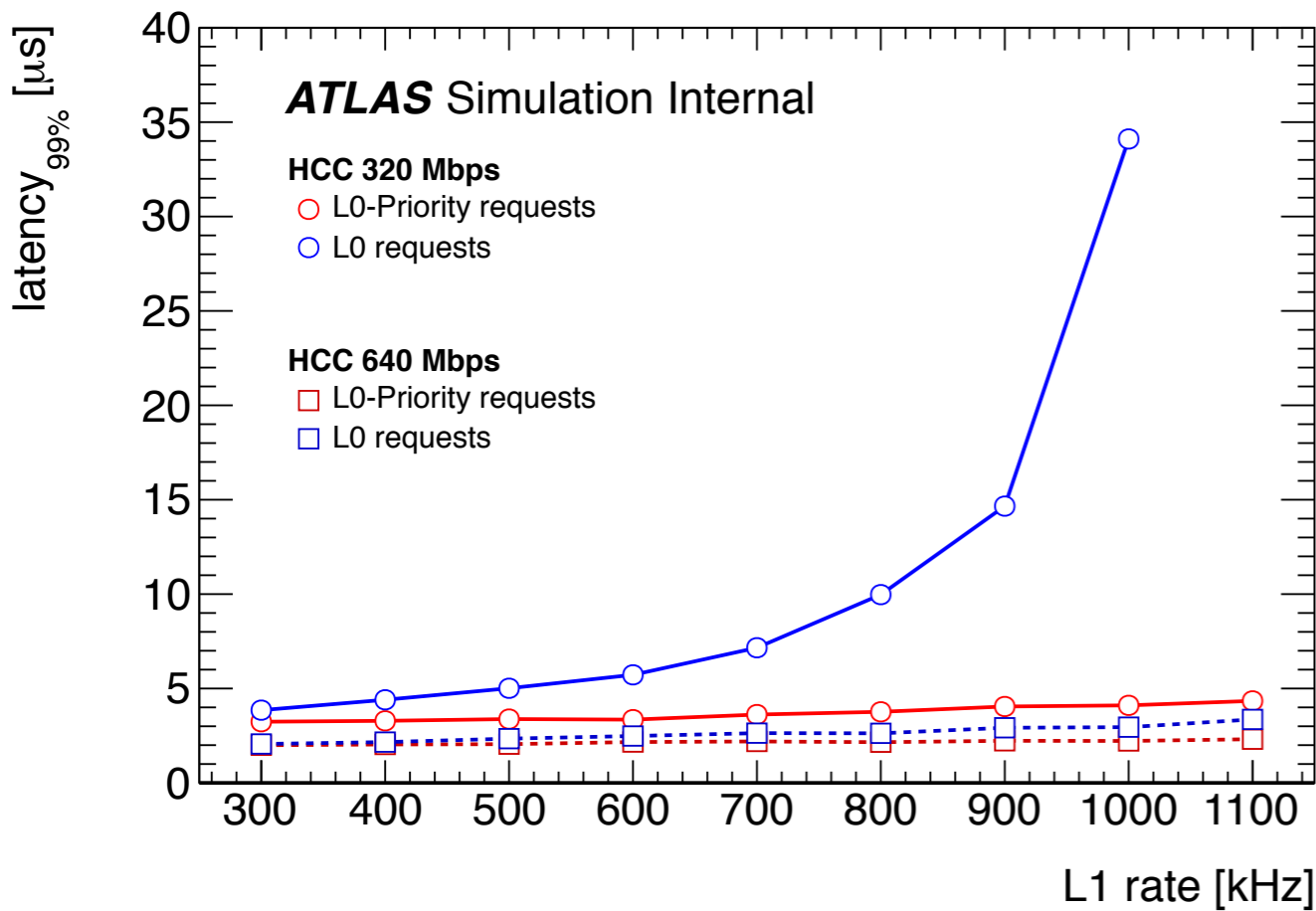
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Endcap

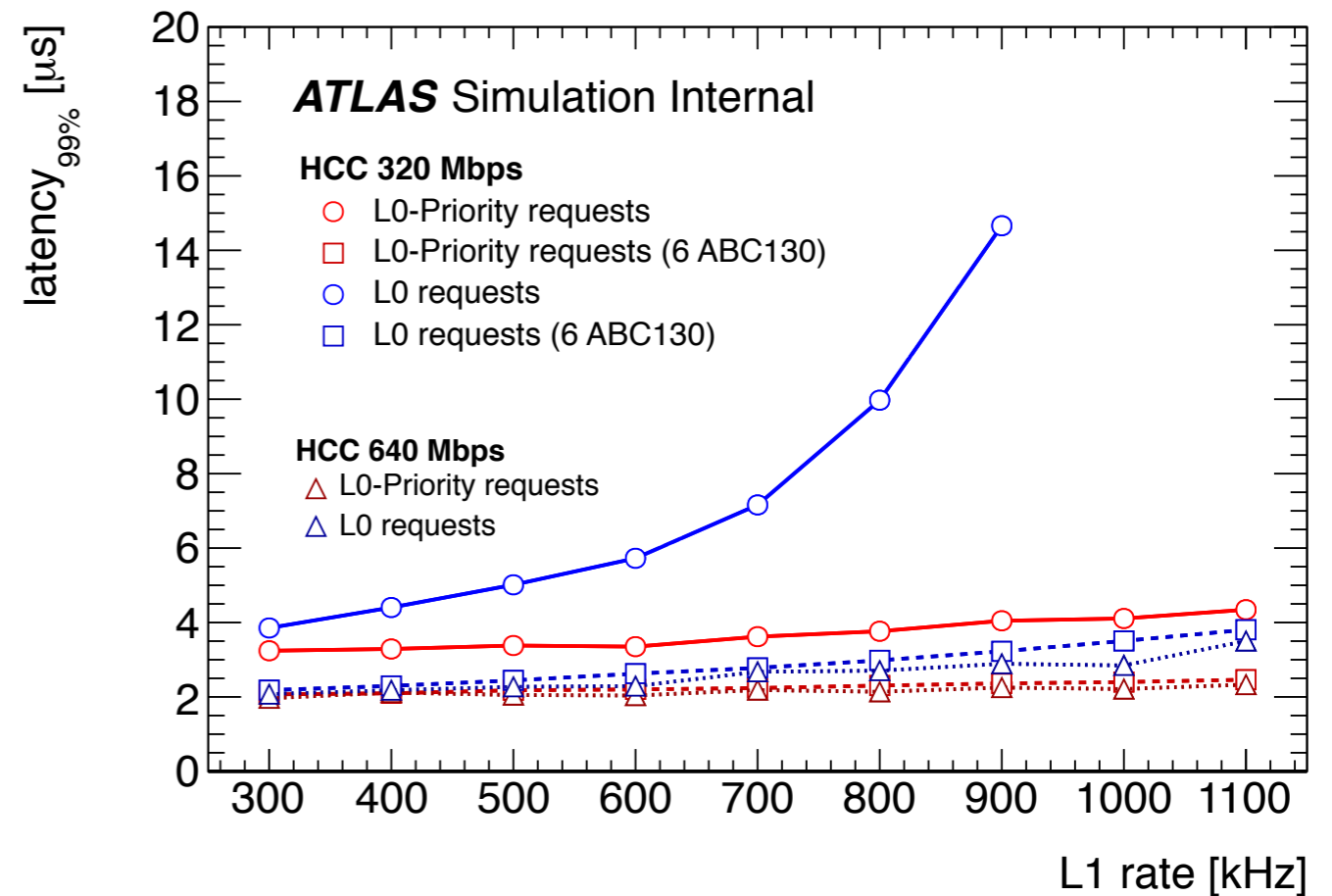
- Ring 7 has the highest occupancy
- Ring 6 has the most chips per hybrid (12) so overall "hybrid occupancy" largest for this ring
- Endcap readout the most critical
- Following ITK week, seemed to converge on two HCCs and two HCC links, for the hybrid
 - Only 6 chips per HCC rather than 12
 - Equivalent to doubling the band width



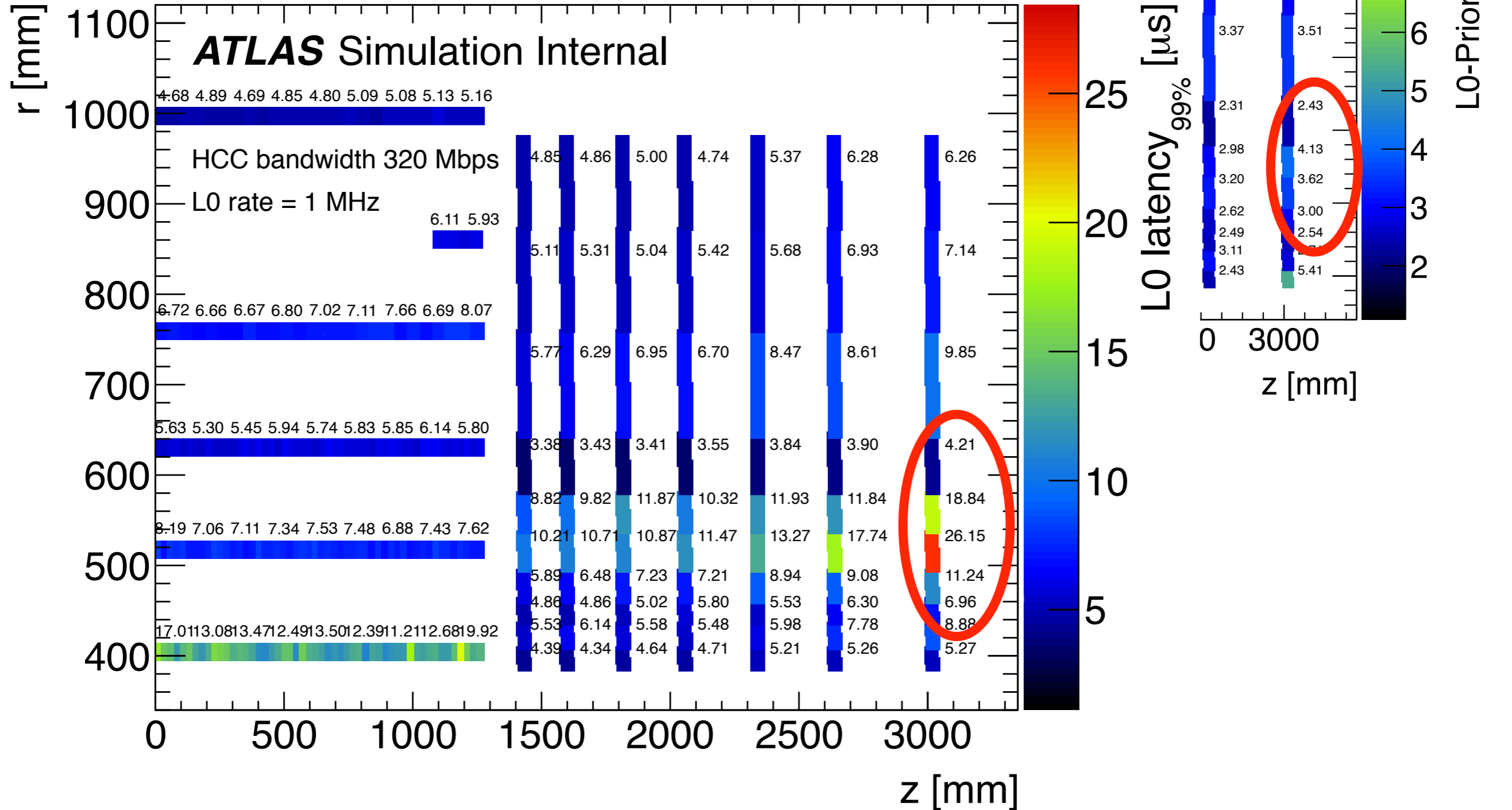
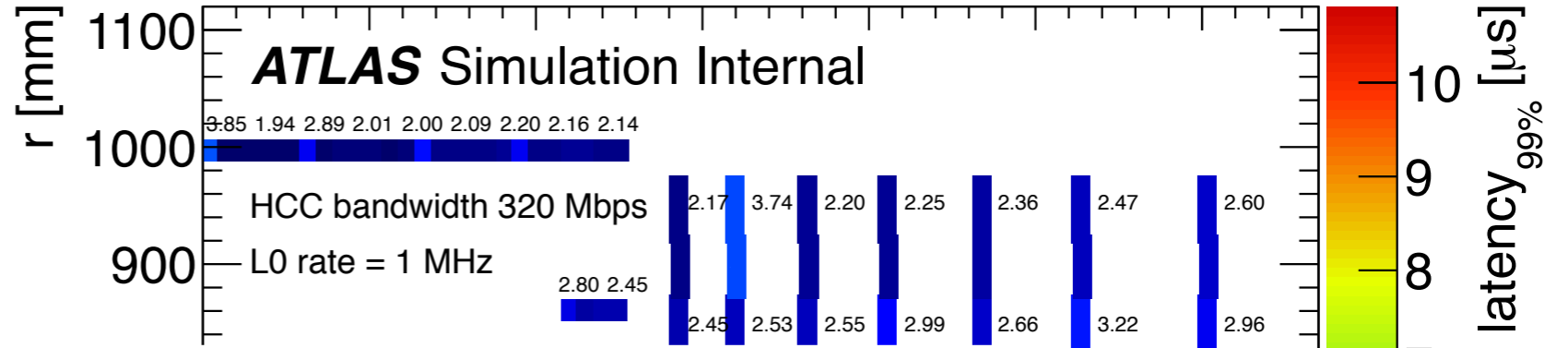


Latency

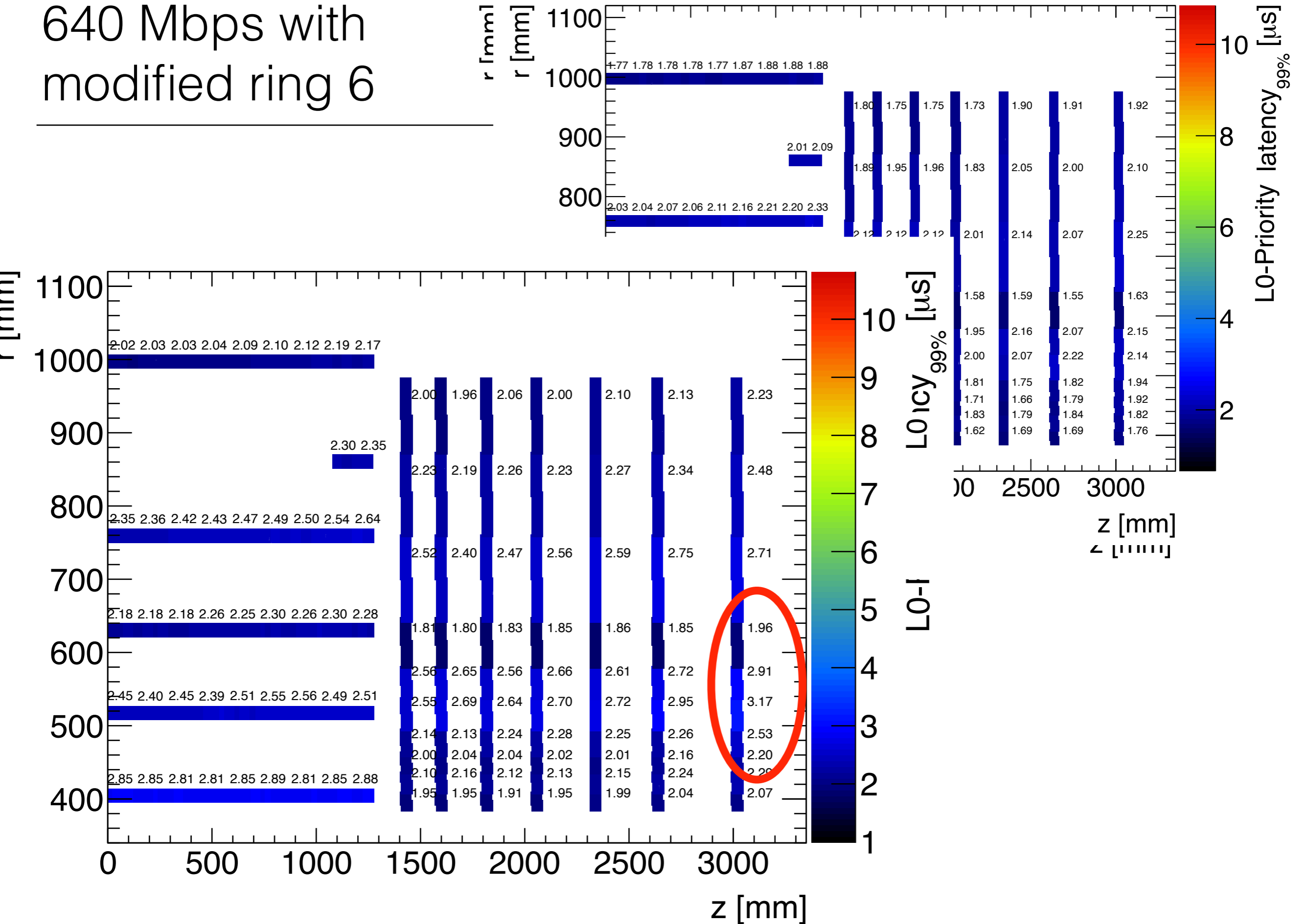
- Latency with 640 Mbps extended to 2.2 MHz
 - As expected L0 latency starts to blow up around ~ 1.8 MHz
- Endcap hybrid ring 6 latency with only 6 ABC130 (2 HCCs and 2 stave links)
 - As expected is very similar to HCC 640 Mbps stavelink band width



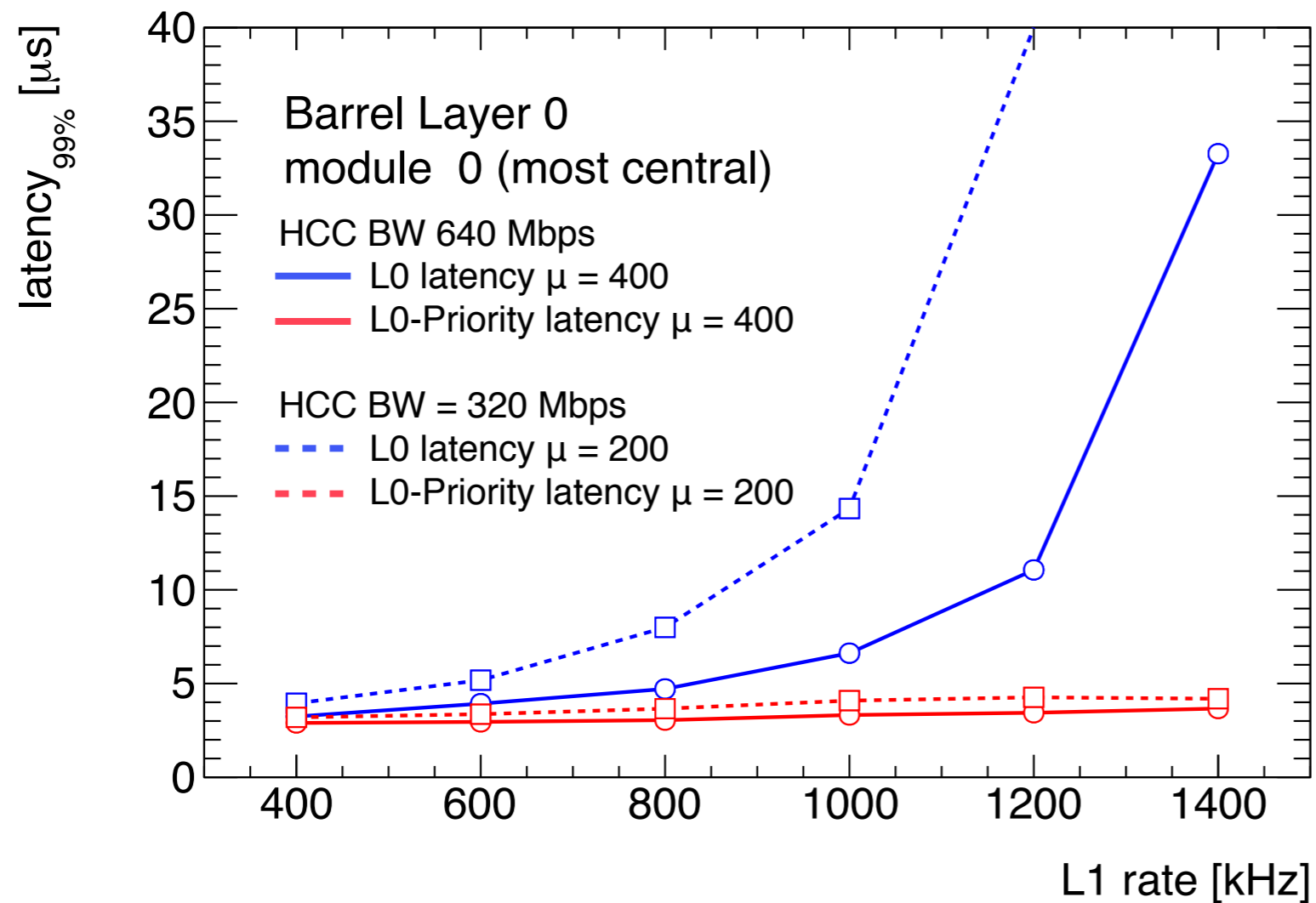
320 Mbps with modified ring 6



640 Mbps with modified ring 6



Replacing the long strips by short



- Replacing the short strips by long strips for the inner layers
 - Doubles the per chip occupancy
 - Halves the number of hybrids
 - Allows twice bandwidth of the HCC stave link, 320 → 640 Mbps
- Emulated with pileup 400

Outlook

- Adding an extra HCC to the endcap hybrid ring 6 should completely fix the endcap ring 6 issue
 - Other endcap modules may still be a problem, although less so than the original ring 6
- Still need to move to a single cluster finder per ABC, but with this proviso ...
- With 640 Mbps can run up to ~ 1.8 MHz
- Replacing short strips with long strips should be achievable