

# Legacy and OM3 Fiber DMD Characterization @1300nm

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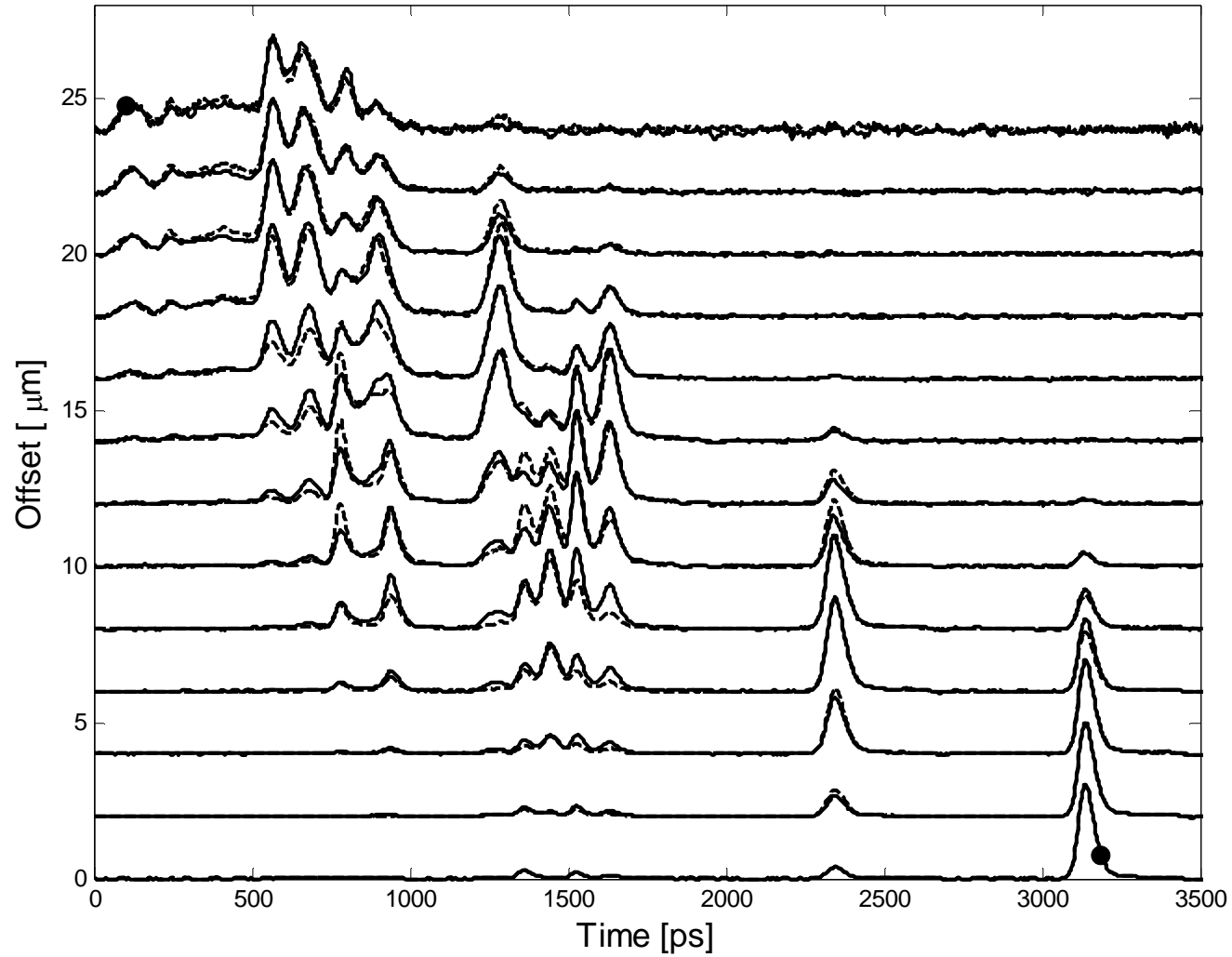
# Which Fibers Did We Measure?

- Measured all Round Robin (RR) fibers from TIA since 1996
  - RR96 – Gigabit Ethernet restricted launch bandwidth spool – 15 fibers (9 62.5 and 6 50  $\mu\text{m}$ ), 300m
  - RR1km – Next generation fiber preparatory RR – measured 48 fibers (30+18, 1km long)
  - NextGen RR – for development of NextGen fiber specs, 12 fibers, 50 $\mu\text{m}$ , 300m
  - “worst case spool” – for testing compliance of 1 Gigabit Ethernet links, 6 fibers, 300m long, 62.5  $\mu\text{m}$  – measured two spools
  - “Other” fiber spools – 12 fibers, 300m, 50 $\mu\text{m}$

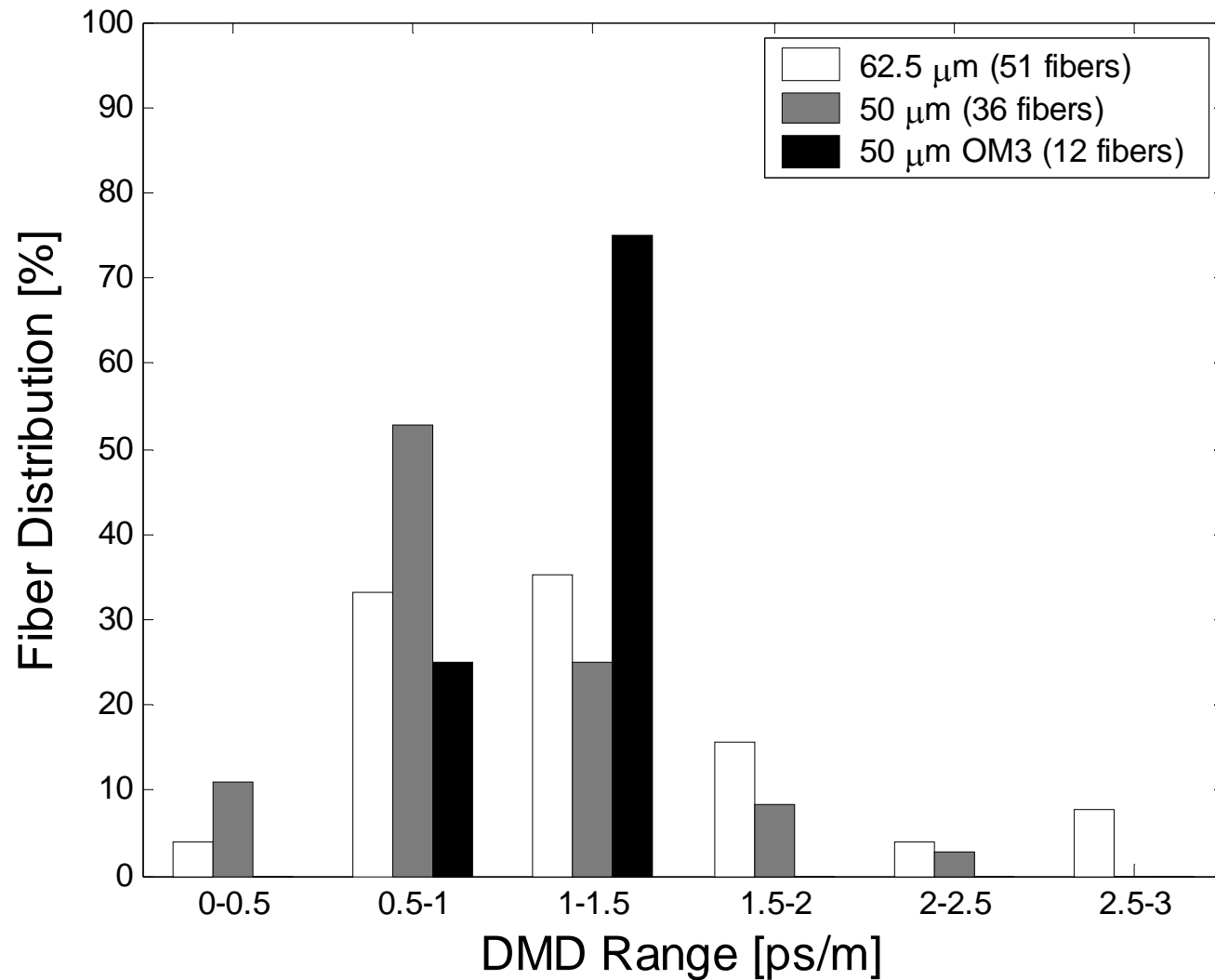
# DMD Measurement

- Performed according to FOTP-220
  - Launched light from a single mode fiber into the fiber under test at various offsets
  - Scanned from -28 to +28  $\mu\text{m}$  (-24 to +24 for 50  $\mu\text{m}$  fiber)
  - Fiber responses at each offset recorded
  - DMD width corrected for laser pulse width and chromatic dispersion

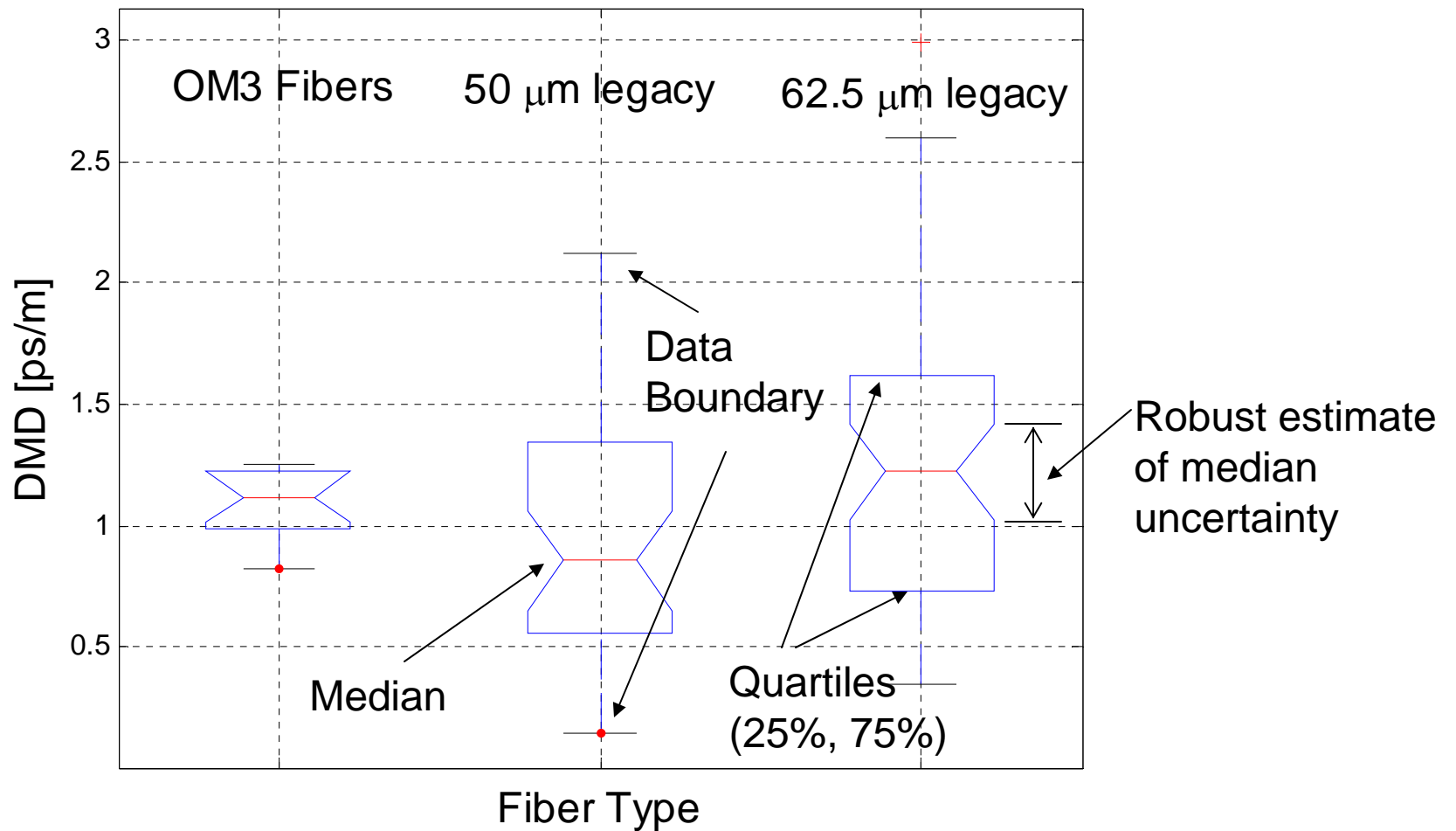
# Sample DMD profile



# Fiber DMD Range Histogram



# DMD Distribution



# What is in the results?

- Expected findings:
  - 62.5  $\mu\text{m}$  fibers have highest DMD median and standard deviation
  - 50  $\mu\text{m}$  legacy fiber has lower DMD median than 62.5  $\mu\text{m}$  and comparable standard deviation
  - OM3 fiber has larger median DMD than legacy 50  $\mu\text{m}$  fiber, but much smaller standard deviation
- Unexpected findings:
  - DMD values  $> 2$  ps/m for 62.5 and 50  $\mu\text{m}$  fibers

# Conclusion

- Legacy 62.5 and 50  $\mu\text{m}$  Fiber DMD is larger than 2ps/m
- OM3 fibers have significantly narrower DMD range – may result in easier equalization
- DMD measurements support the two distinct distances objective