Updated DMD Simulation and Correlation Based on Index Profile

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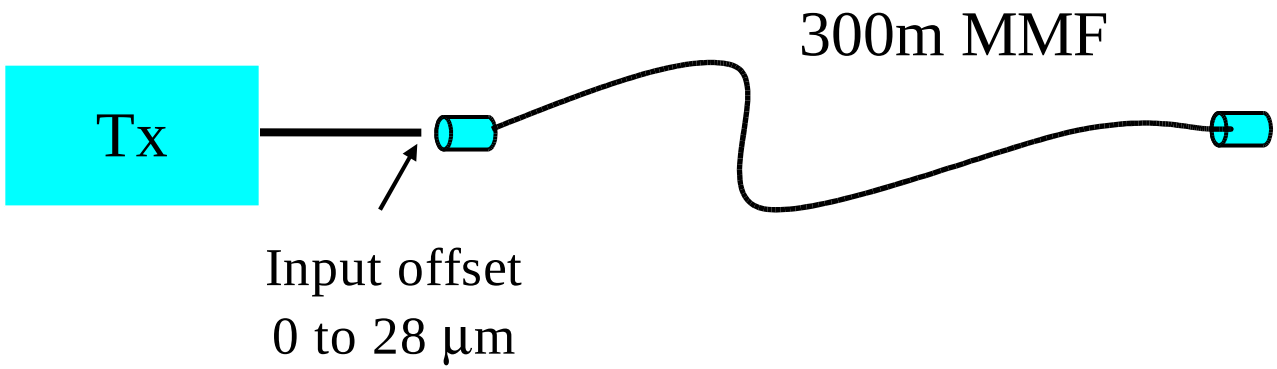
Overview

- **Broadcom and Optium showed DMD results based on Index profile during IEEE interim meeting.**
  - ⇨http://www.ieee802.org/3/aq/public/may04/sun_1_0504.pdf
  - ⇨The results had strong correlation but the Broadocm DMD phase was opposite of Optium.
- **Optium simulations was based on a in-house tool**
- **Broadcom based on commercial RSOFT tool**
  - ⇨RSOFT has provided an updated DLL for Simulator to fix DMD phase.
- **Broadcom and Optium result now correlate and have the same phase.**

Simulation Block Diagram and Fiber Parameters

- **Fiber parameters**

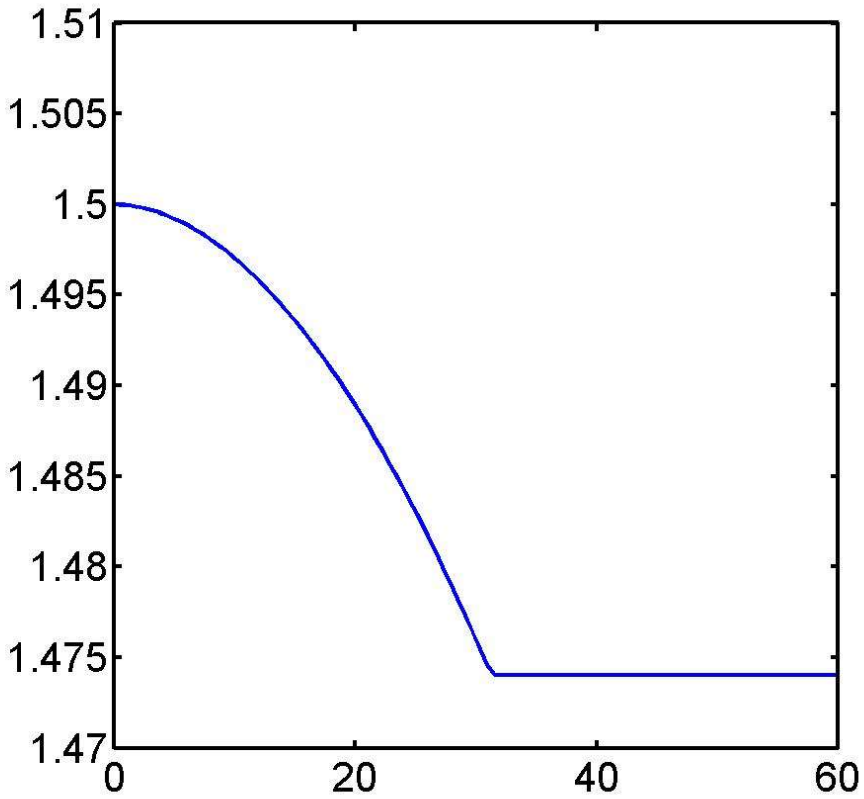
rCladding	**62.5 μ**	**nCoreCenter**	**1.5**
rCore	**31.25 μ**	**nCladding**	**1.474**



Spatial Laser Source Property for DMD Simulation

- **Optium Spatial Source**
  - ⇨Gaussian Beam with FWHM= 2.9 μm (1/e=3.5 μm)
  - ⇨Gaussian pulse FWHM = 50 ps
- **Broadcom Spatial Source**
  - ⇨Laguerre-Gaussian Beam with 1/e= 3.5 μm
  - ⇨Gaussian pulse FWHM = 50 ps

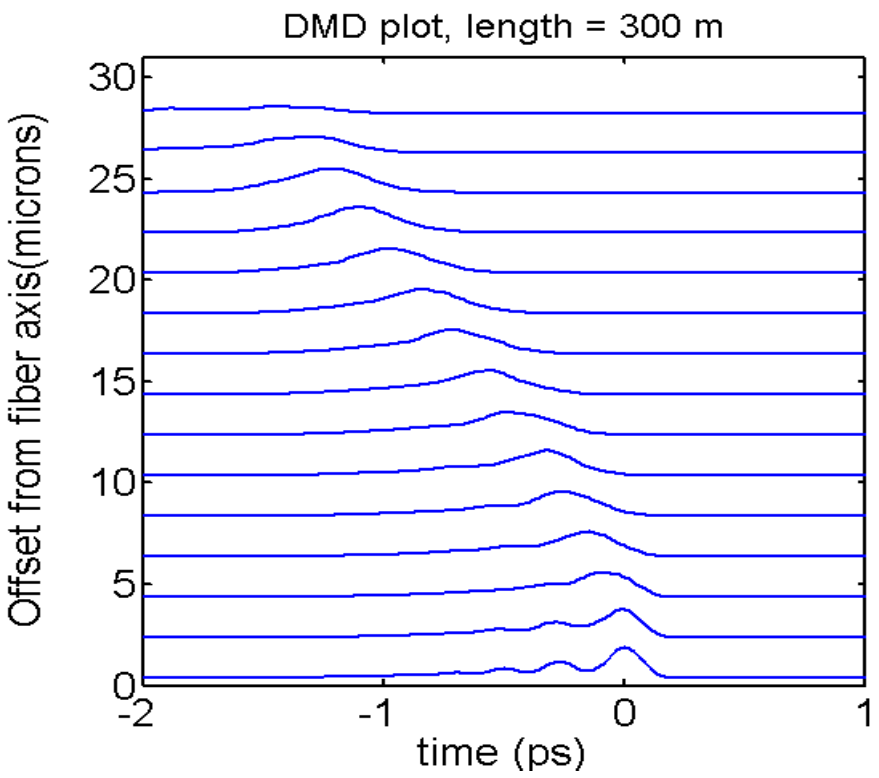
Index Profile for Case I



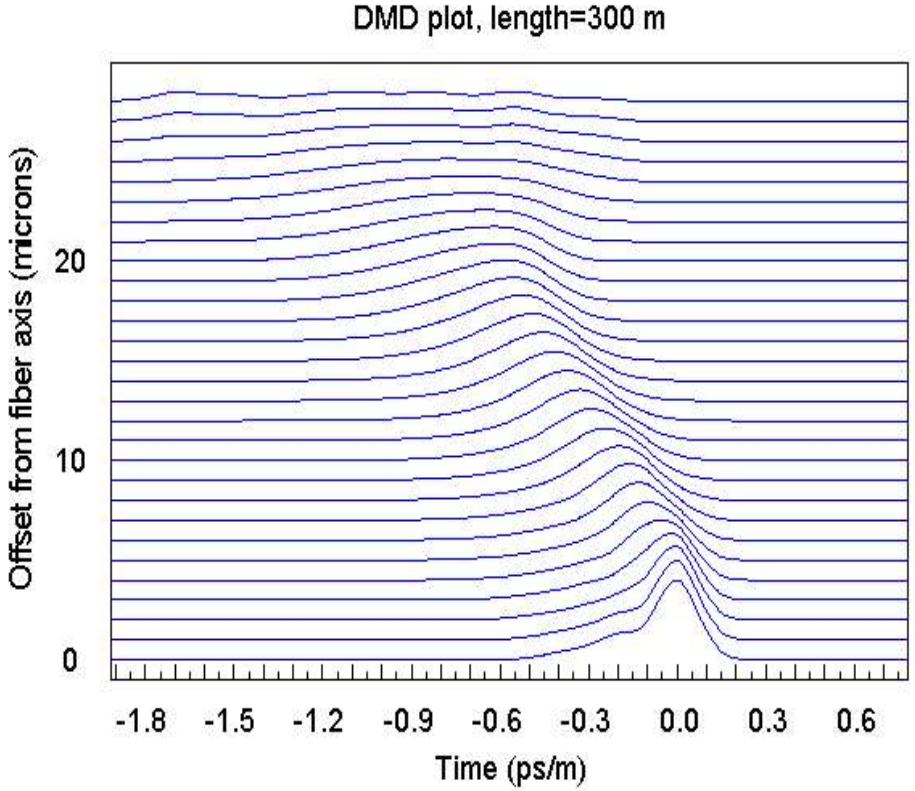
Radius (μm)

DMD Comparison for Case - I

Optium

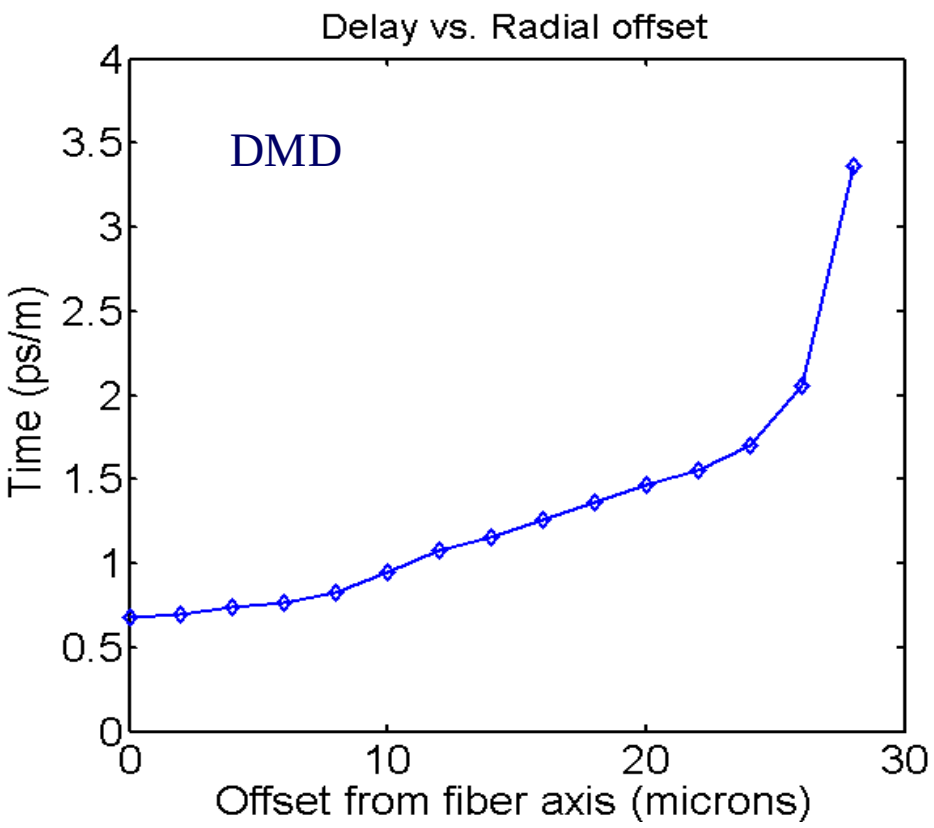


Broadcom

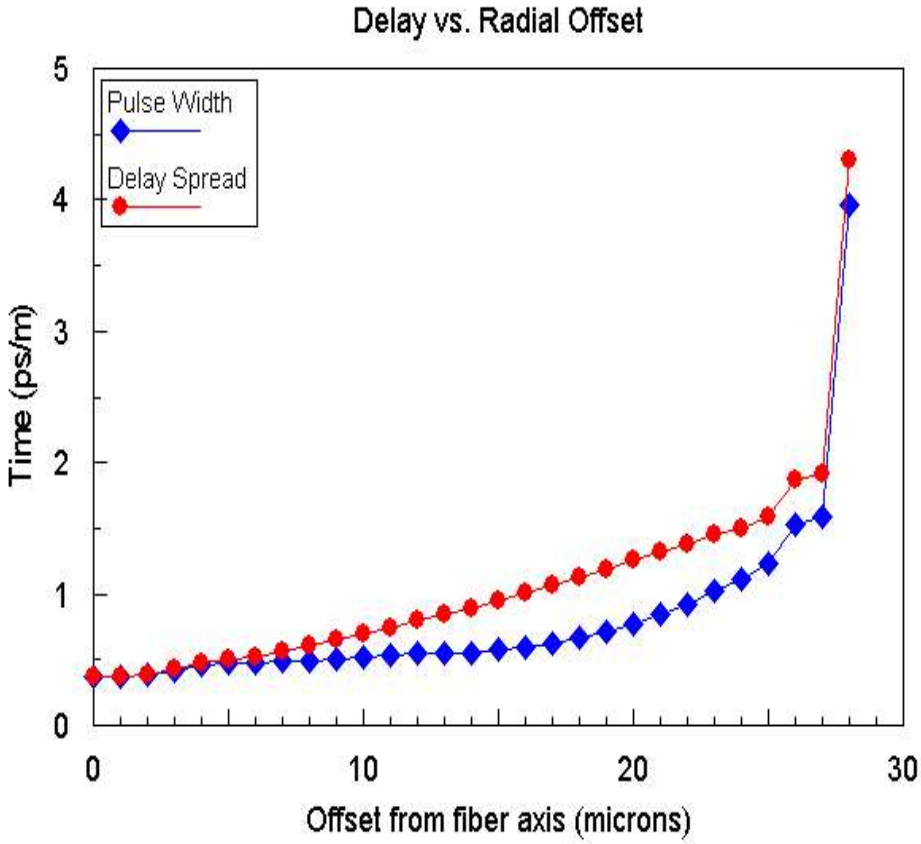


DMD as Function of Radial Offset Case - I

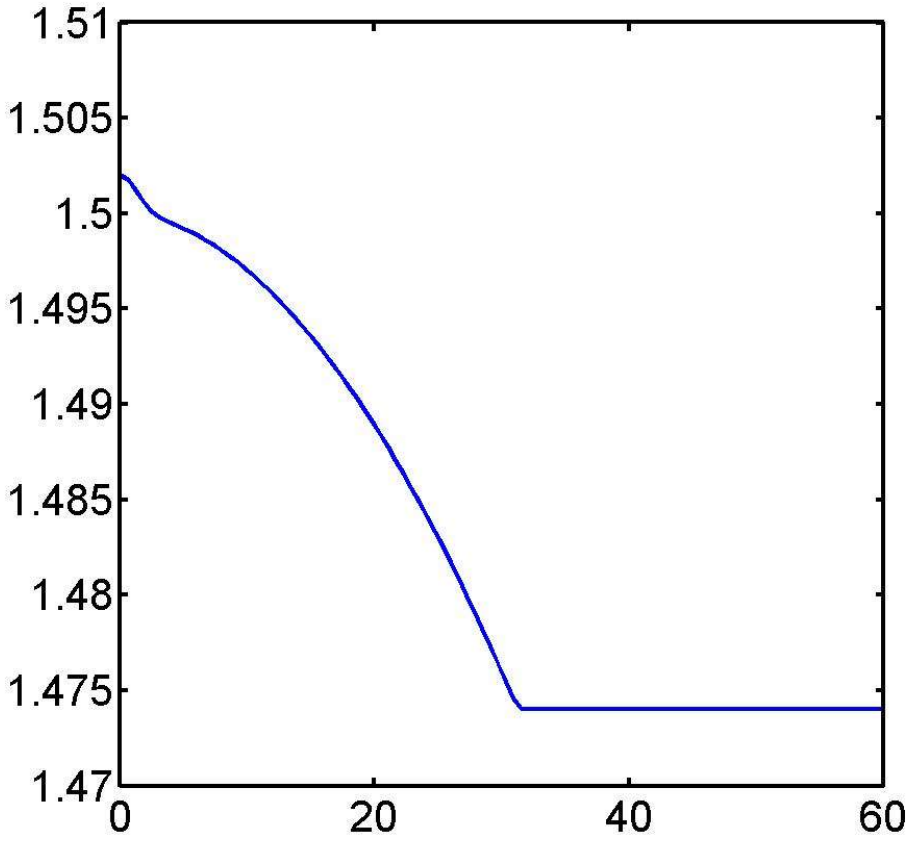
Optium



Broadcom



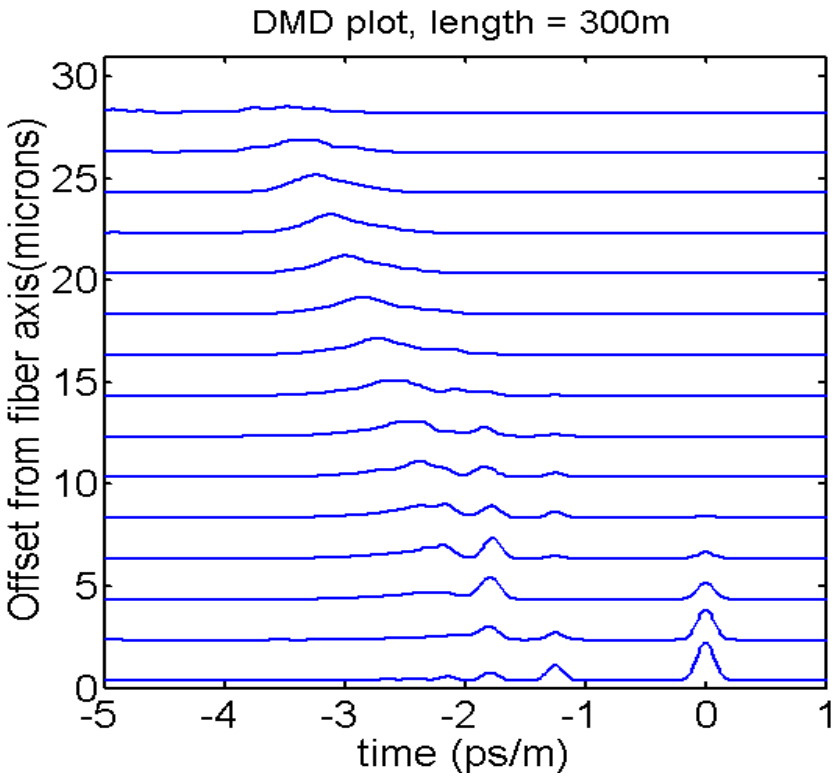
Index Profile for Case II



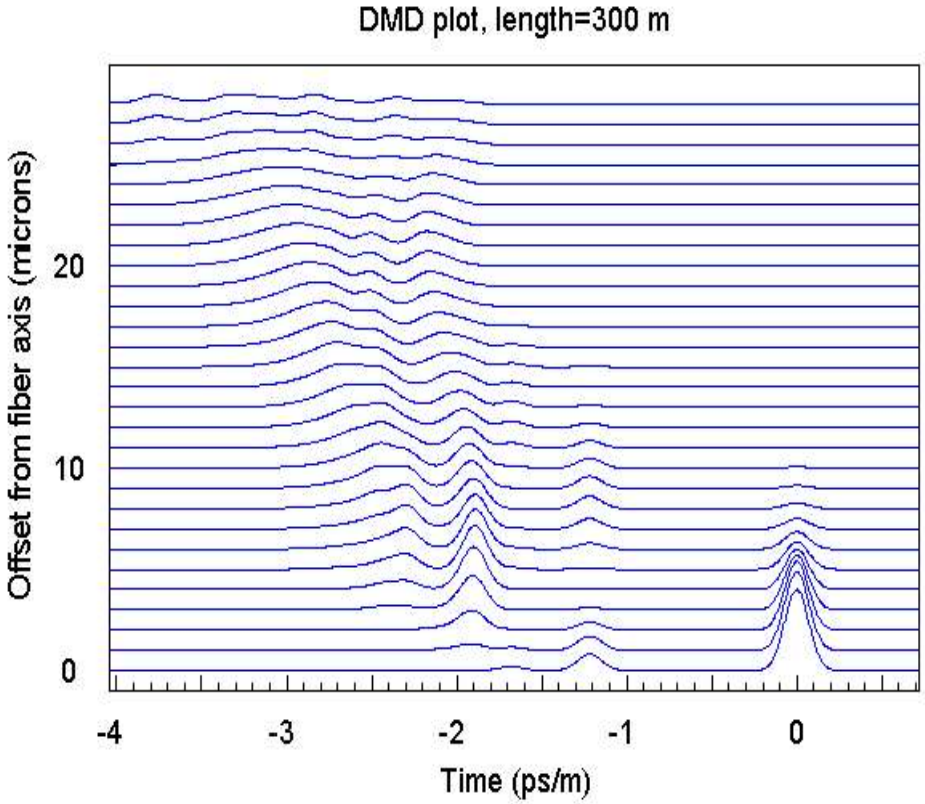
Radius (μm)

DMD Comparison for Case - II

Optium

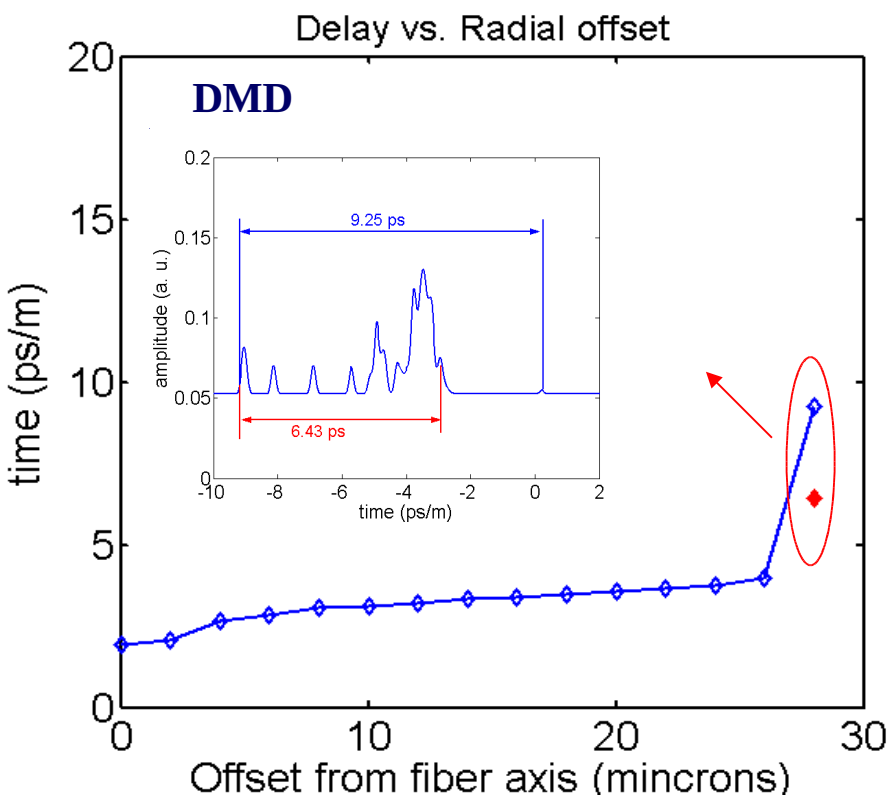


Broadcom

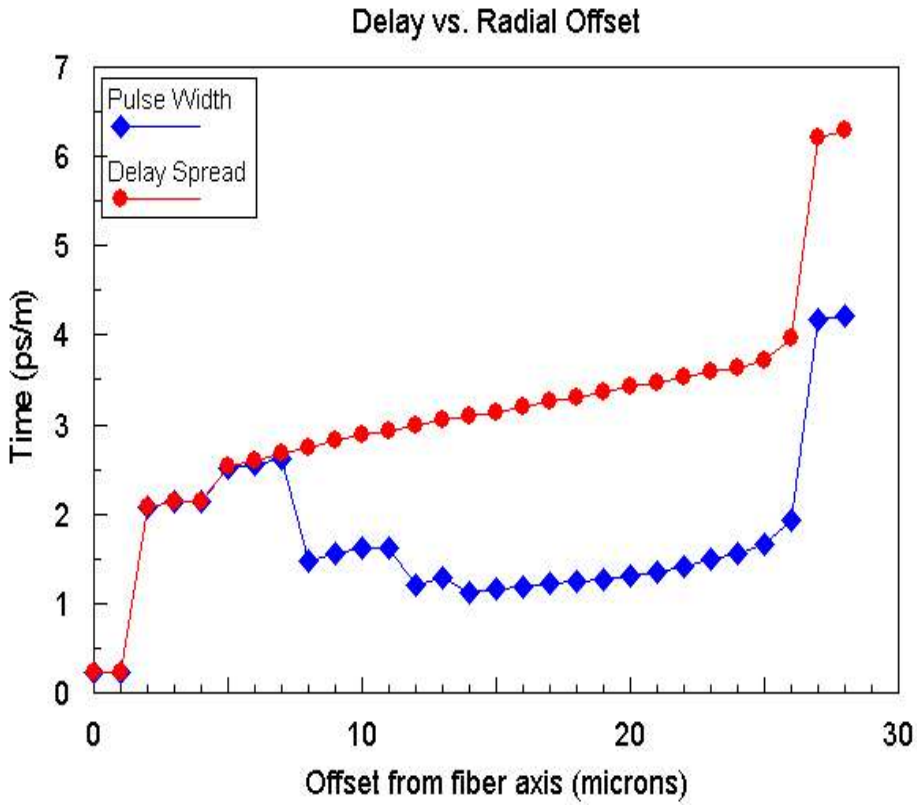


DMD as Function of Radial Offset Case - II

Optium



Broadcom



Summary

- **Broadcom and Optium DMD results show strong correlation including the phase with updated DLL library.**
- **With commercially available tools such as Rsoft, simulation of Index Profile is straight forward and without limitation of model delay tables.**
  - ⇨Using a two way Xeon 1.1 GHz PC it takes 8 minutes to simulate on of the 81 fibers at 28 positions.
- **Strongly recommend to make available fiber Index Profiles to better address 802.3aq implementations.**