

Simulation and Correlation of DMD Based on Index Profile

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Overview

- ❑ **Broadcom and Optium independent DMD simulation shows strong correlation.**
- ❑ **Optium simulator based on a in-house simulator**
- ❑ **Broadcom based on commercial RSOFT tool**
- ❑ **Starting point was index profile based on 81 fiber profile as described in JLT Vol 17, No 9, pp 1532-1541, 1993.**



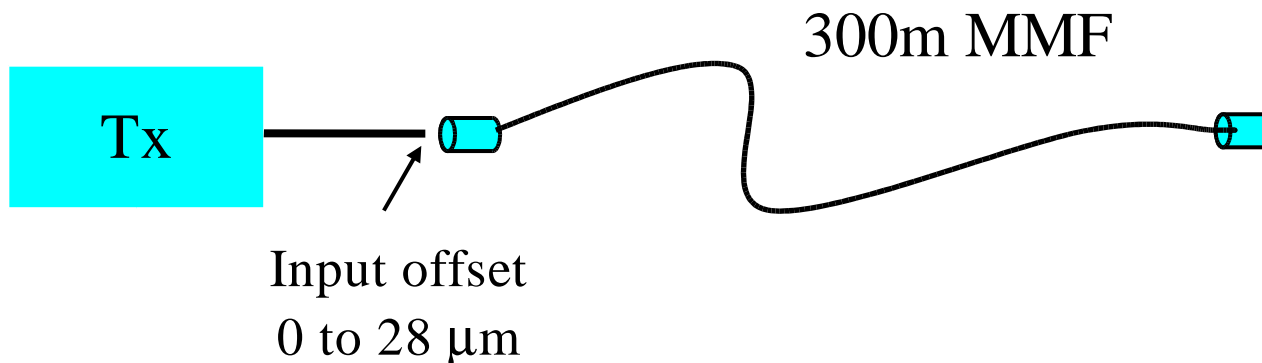
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Simulation Block Diagram and Fiber Parameters

□ Fiber parameters

rCladding	62.5 μ	nCoreCenter	1.5
rCore	31.25 μ	nCladding	1.474



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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

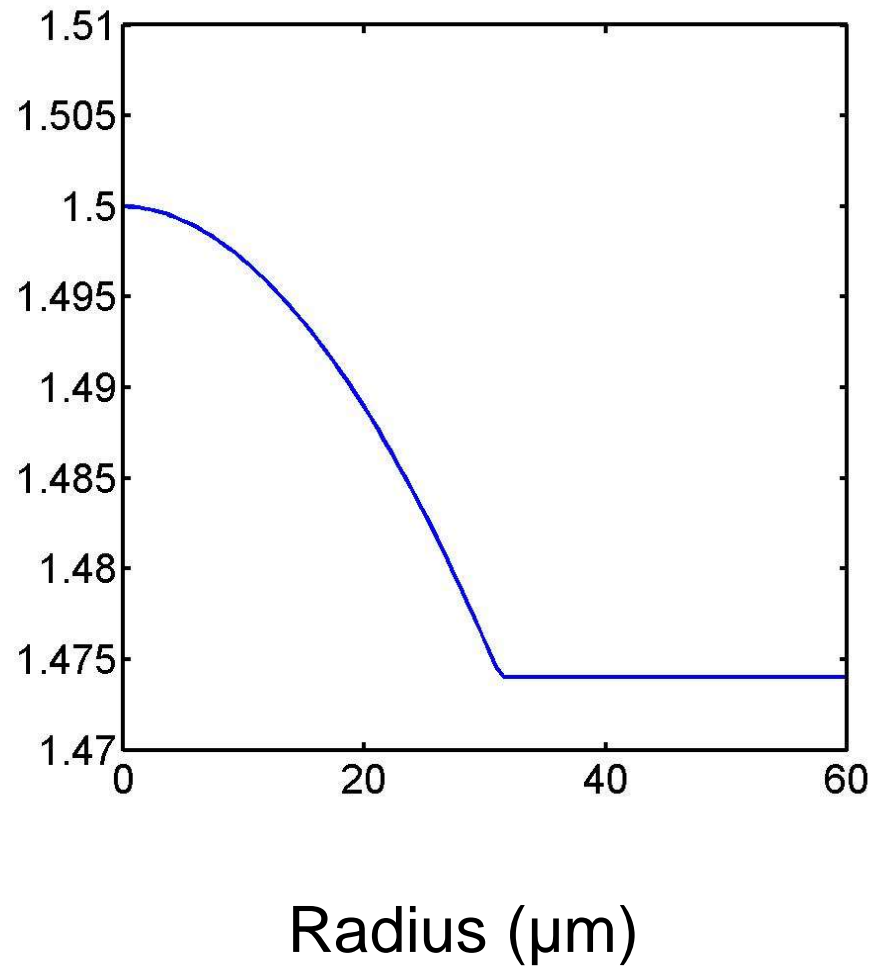
- ⇒ Laguerre-Gaussian Beam with 1/e= 3.5 μm
- ⇒ Gaussian pulse FWHM = 50 ps



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Index Profile for Case I



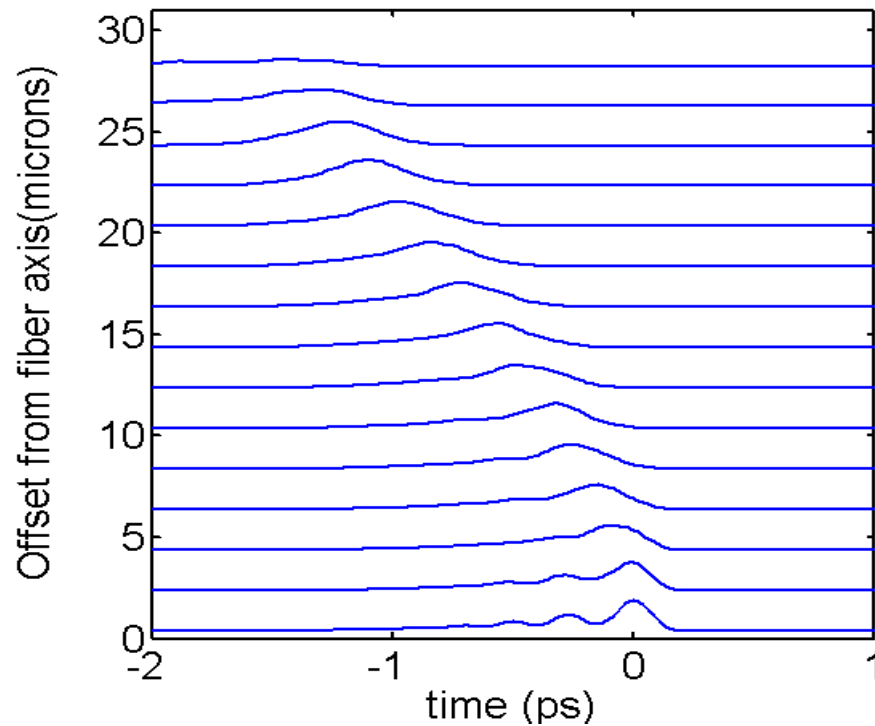
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DMD Comparison for Case - I

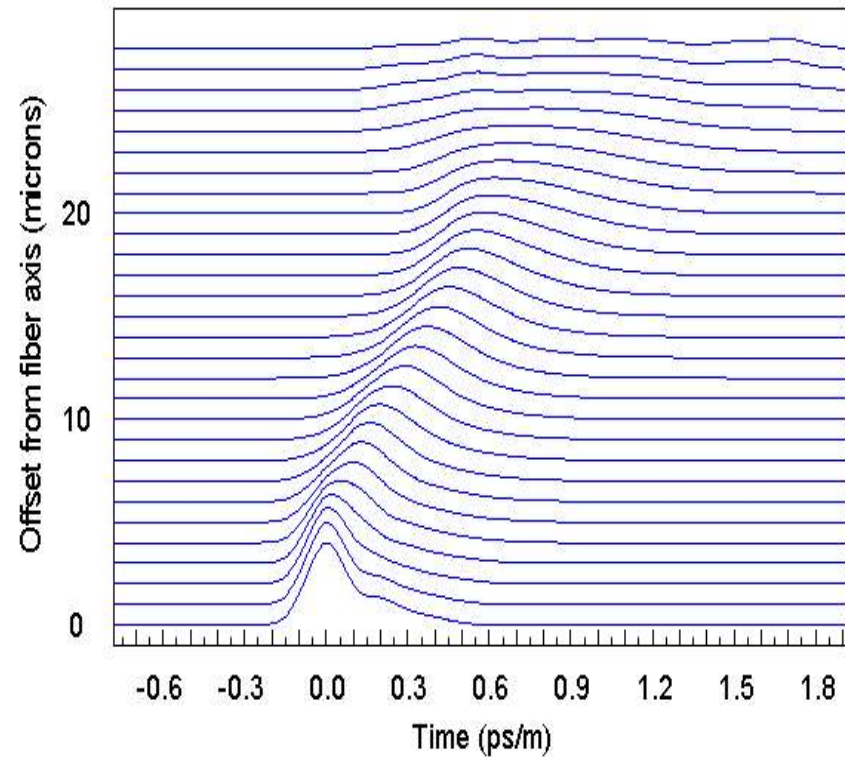
Optium

DMD plot, length = 300 m



Broadcom

DMD plot, length=300 m



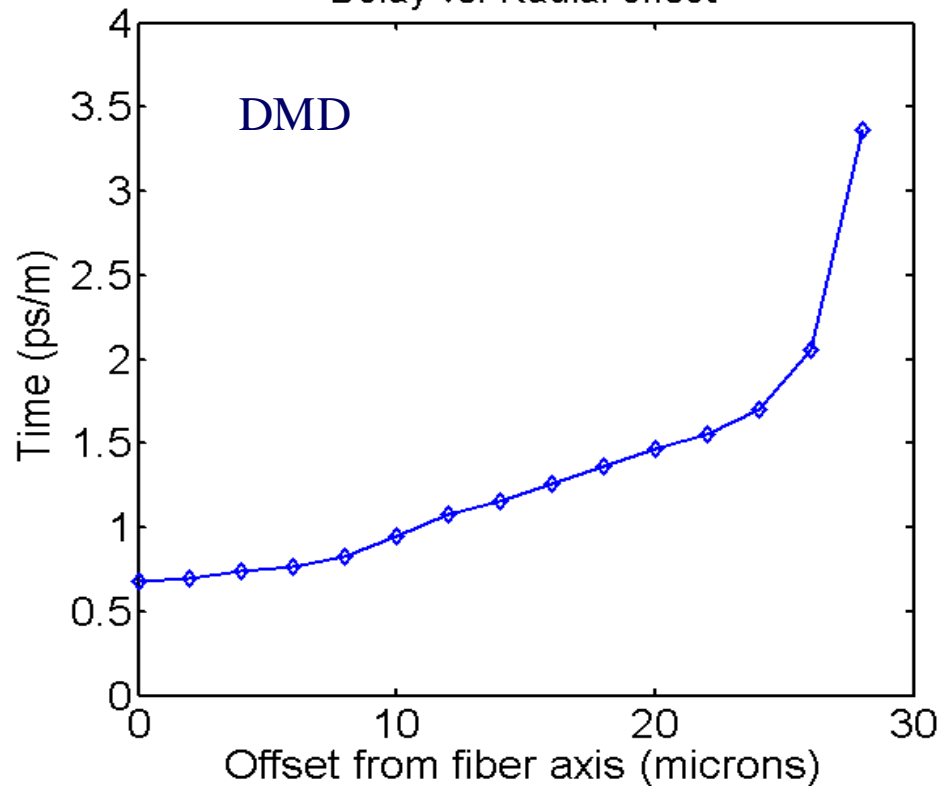
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DMD as Function of Radial Offset Case - I

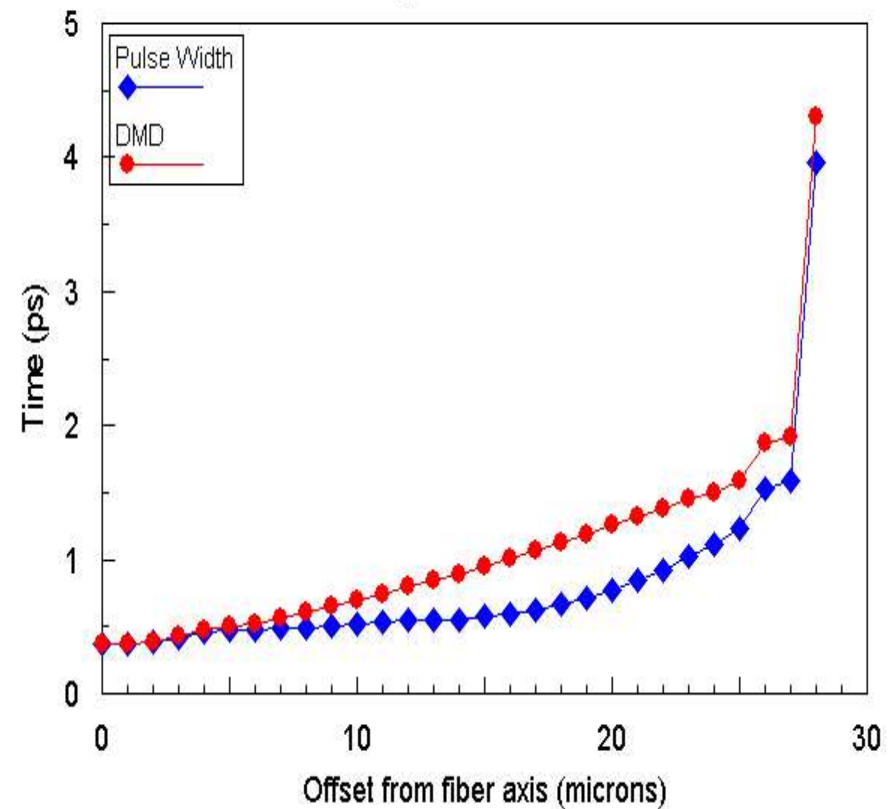
Optium

Delay vs. Radial offset



Broadcom

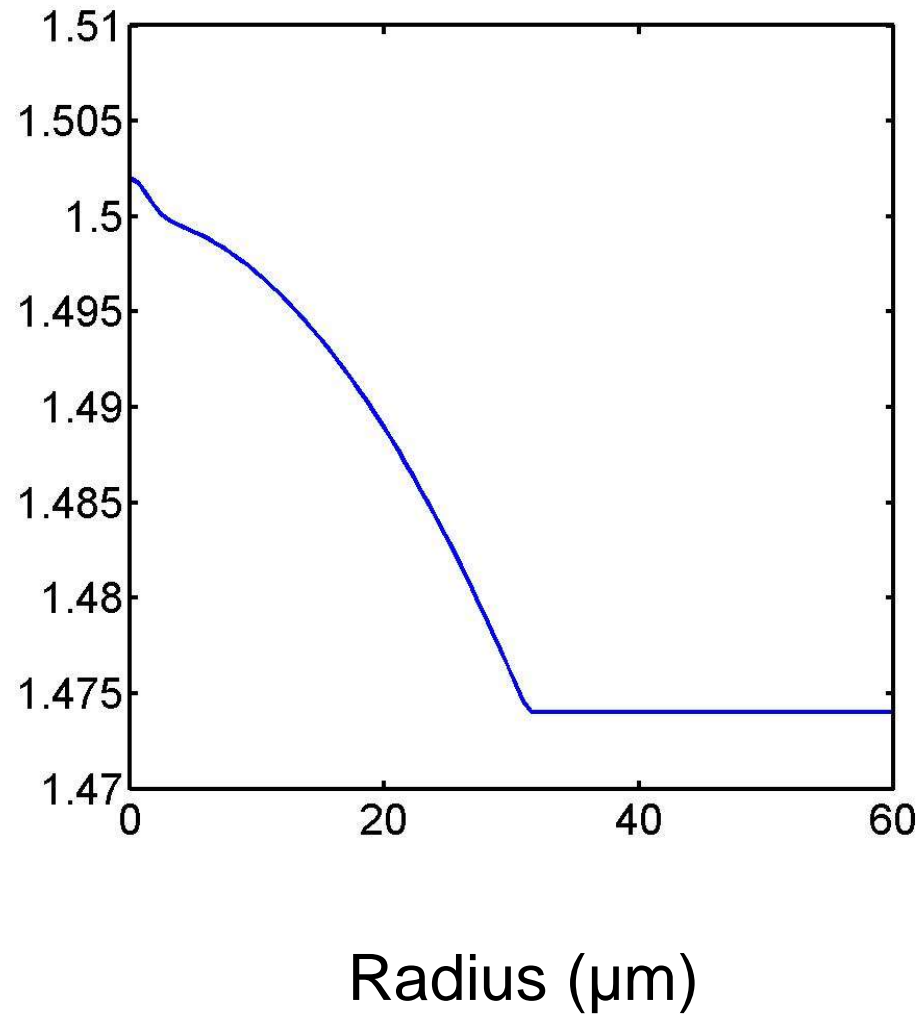
Delay vs. Radial Offset



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Index Profile for Case II



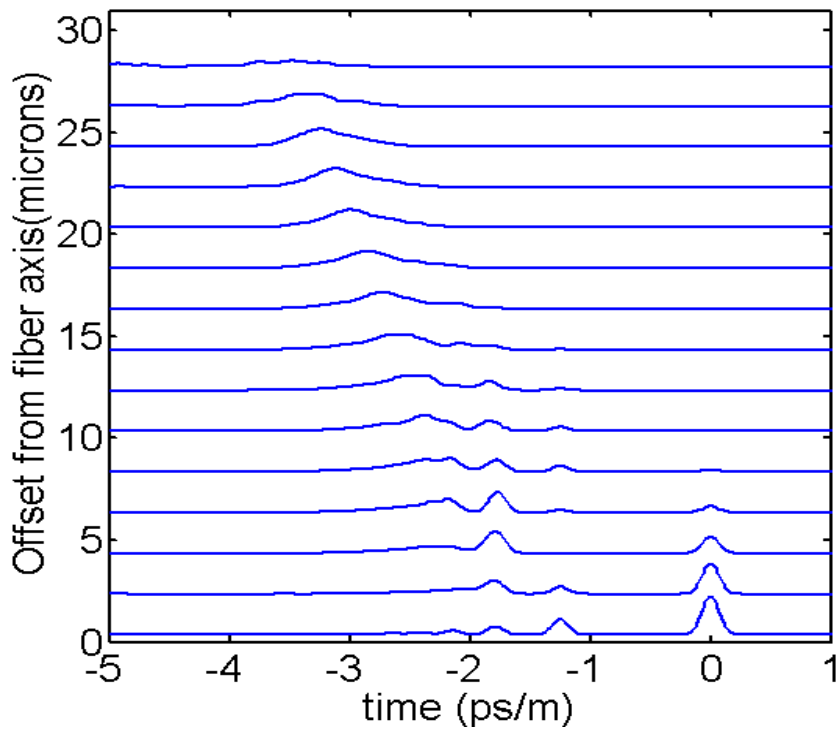
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DMD Comparison for Case - II

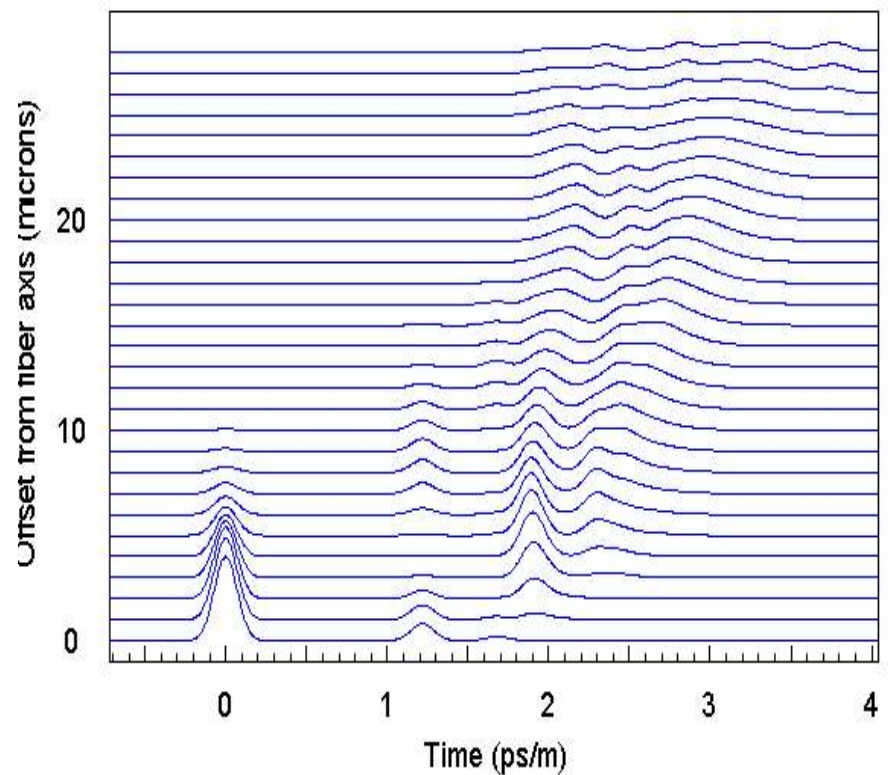
Optium

DMD plot, length = 300m



Broadcom

DMD plot, length=300 m

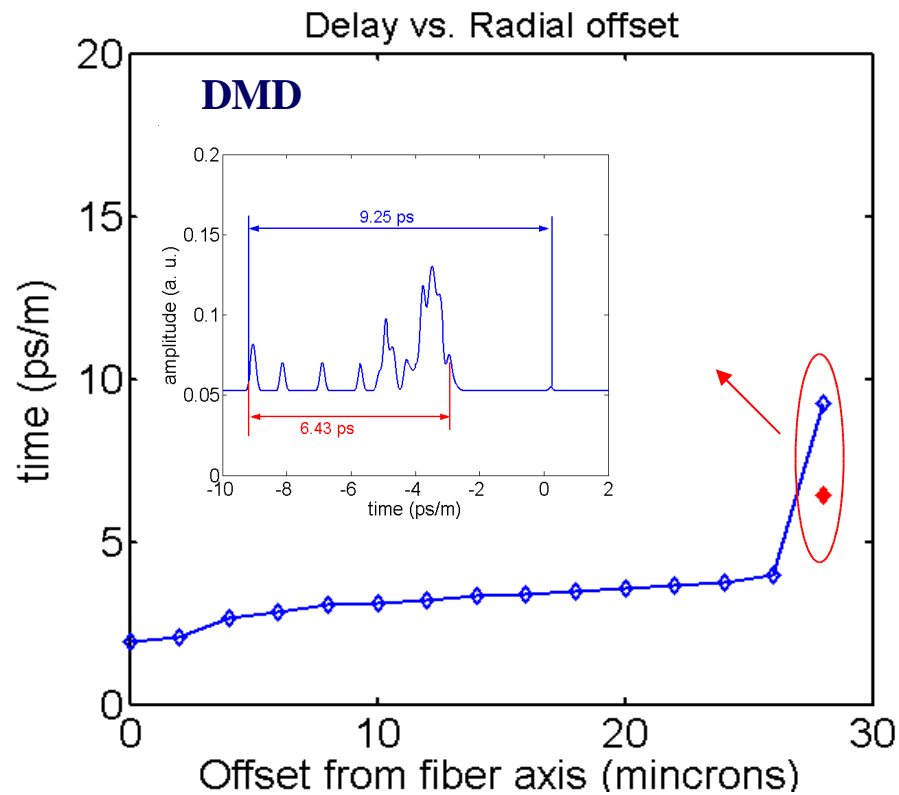


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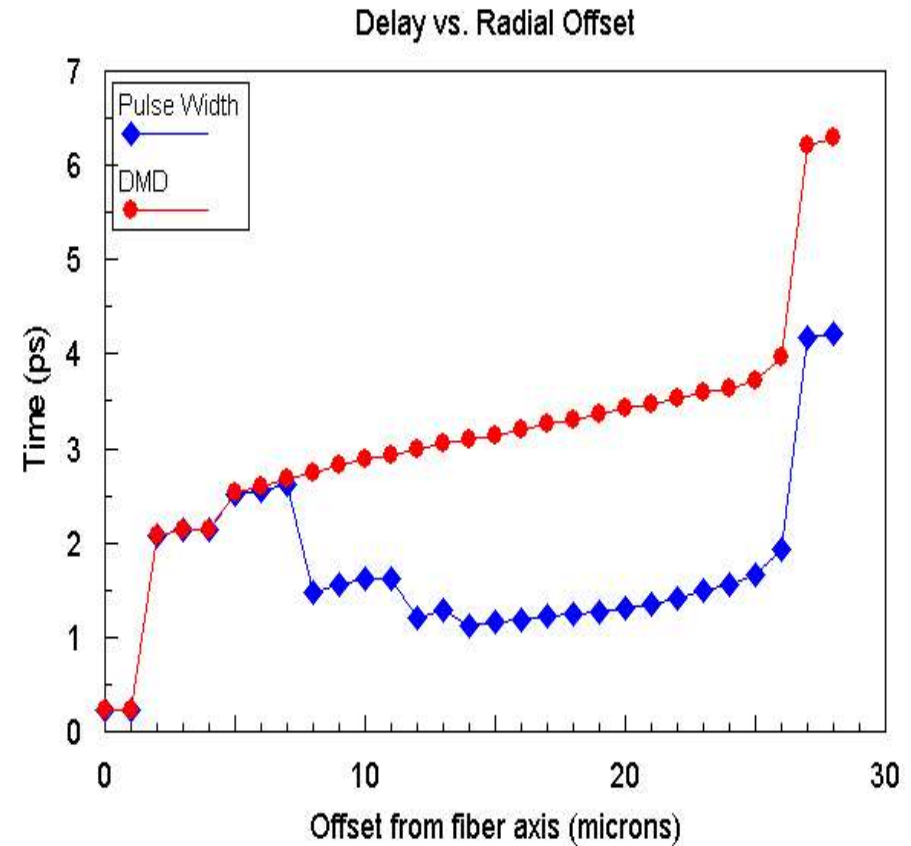


DMD as Function of Radial Offset Case - II

Optium



Broadcom



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Summary

- ❑ **Broadcom and Optium have shown good correlation for DMD simulation.**
- ❑ **DMD pulse shapes are very similar with exception of their representation which is reversed**
- ❑ **Next step is correlation with 81 fibers and establish a pool of bad fibre based on Index profile.**
- ❑ **With Cambridge U 81 index profile data missing the task of correlation to an specific fiber becomes very challenging.**



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