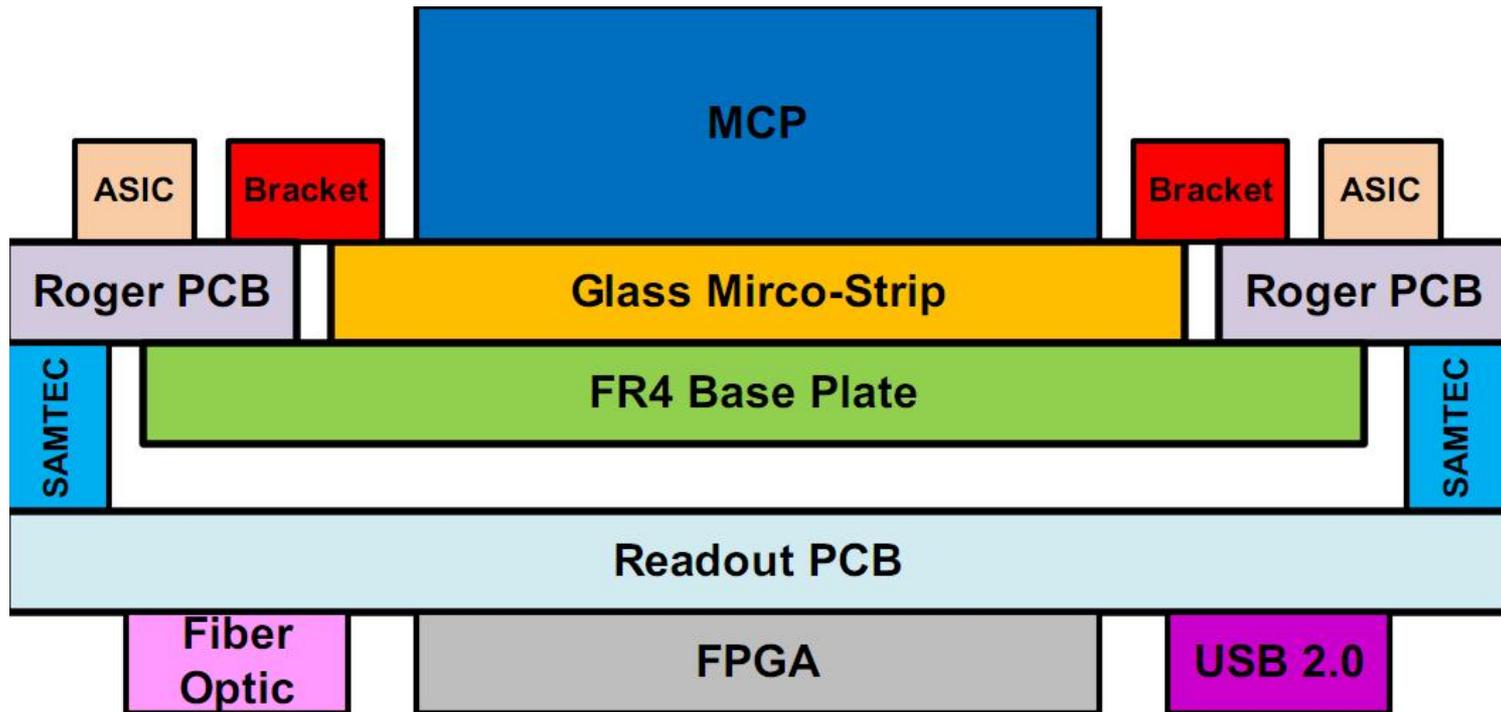


# Integration of Front-end Electronics with the Detector

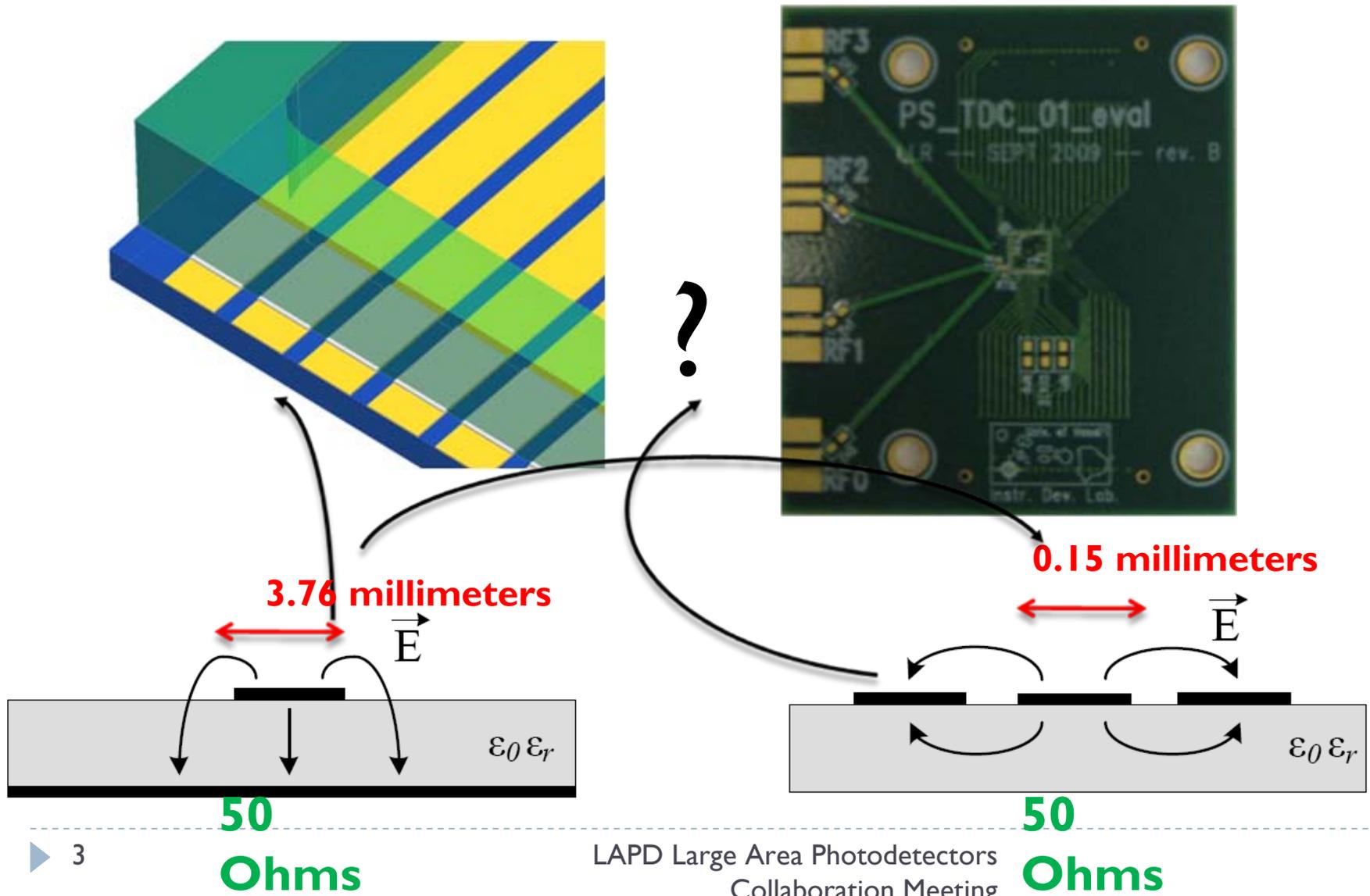
- ▶ *Herve Grabas – University of Chicago*

# Current assembly

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# Detector to chip

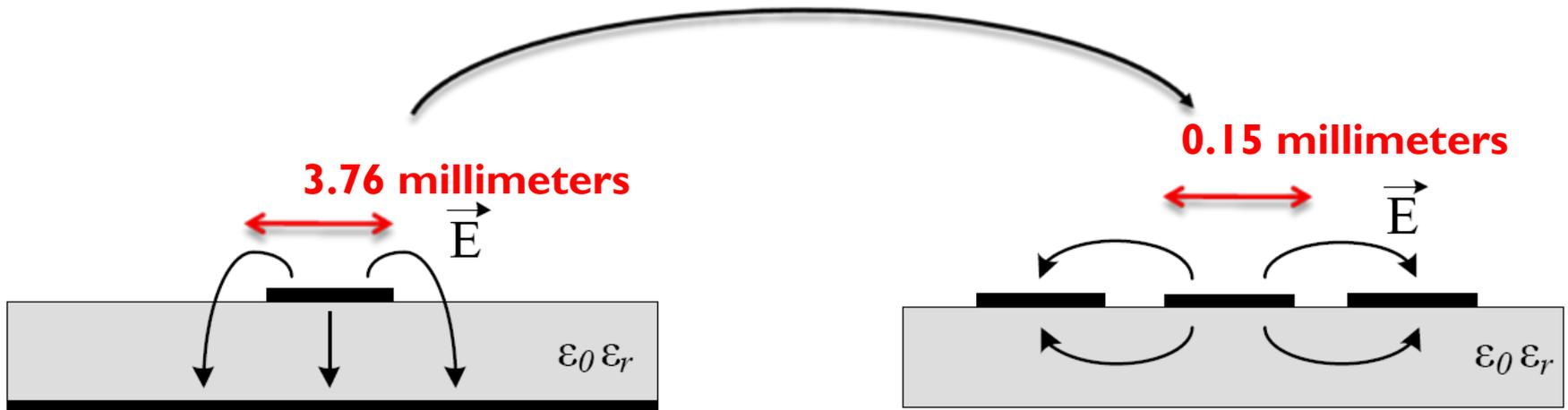


# Situation

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3 gaps:

- Geometry (microstrip to coplanar)
- Dimensions (3.76mm to 0.15mm)
- Materials (Glass to PCB)



# Specs

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- ▶ Min cutoff-frequency 2GHz  
->  $\lambda = 7\text{mm}$  (in PCB)
- ▶ We are in the diffraction domain therefore transition must be as smooth as possible.
- ▶ Take precaution with waves



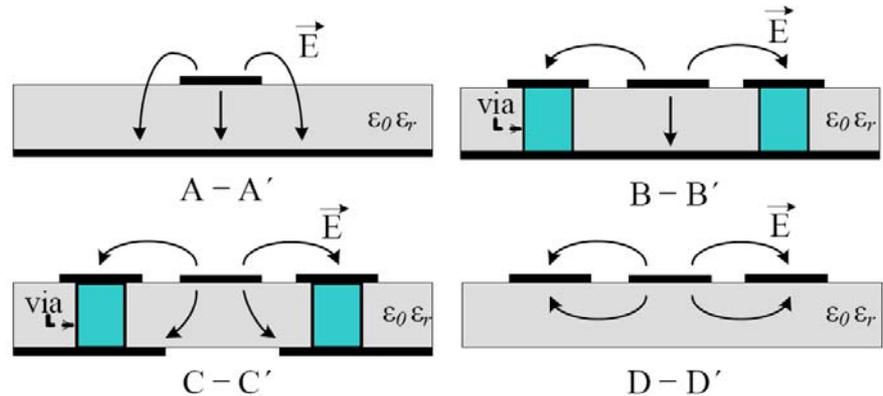
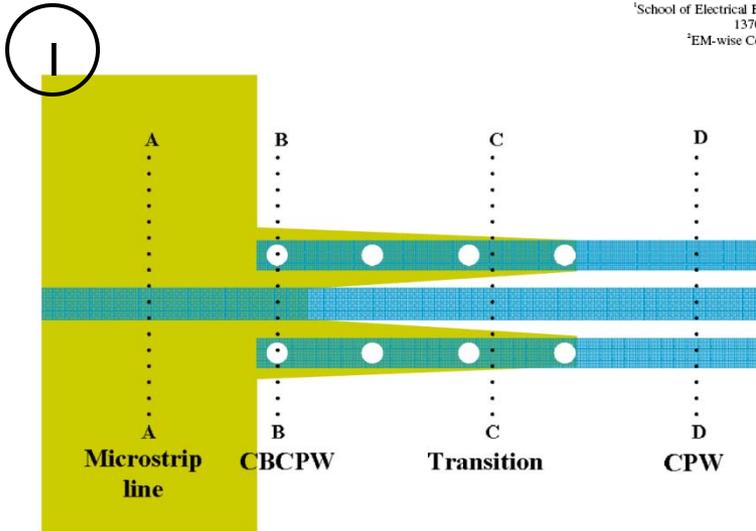
# Transition

## An Ultra-wideband Microstrip-to-CPW Transition

Young-Gon Kim,<sup>1</sup> Kang Wook Kim,<sup>1,2</sup> Young-Ki Cho<sup>1</sup>

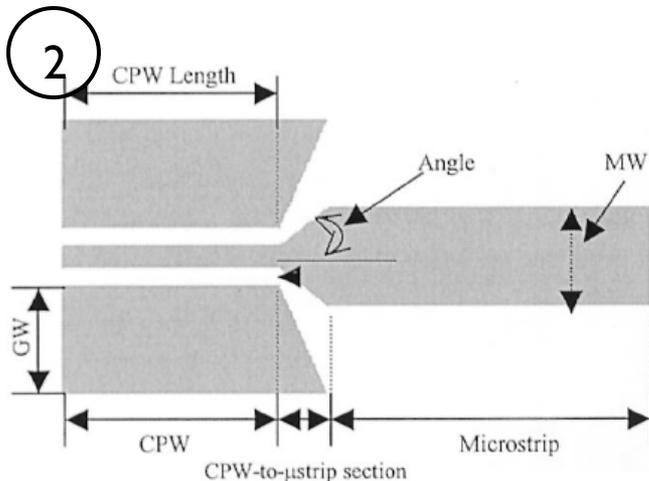
<sup>1</sup>School of Electrical Engineering and Computer Science, Kyungpook National University,  
1370 Sangyeok-dong, Buk-gu, Daegu, 702-701, Korea.

<sup>2</sup>EM-wise Communications Co., 573-13 Bokhyun-dong, Daegu, Korea.



## Wideband Coplanar Waveguide RF Probe Pad to Microstrip Transitions Without Via Holes

Guizhen Zheng, *Student Member, IEEE*, John Papapolymerou, *Member, IEEE*, and Manos M. Tentzeris, *Senior Member, IEEE*

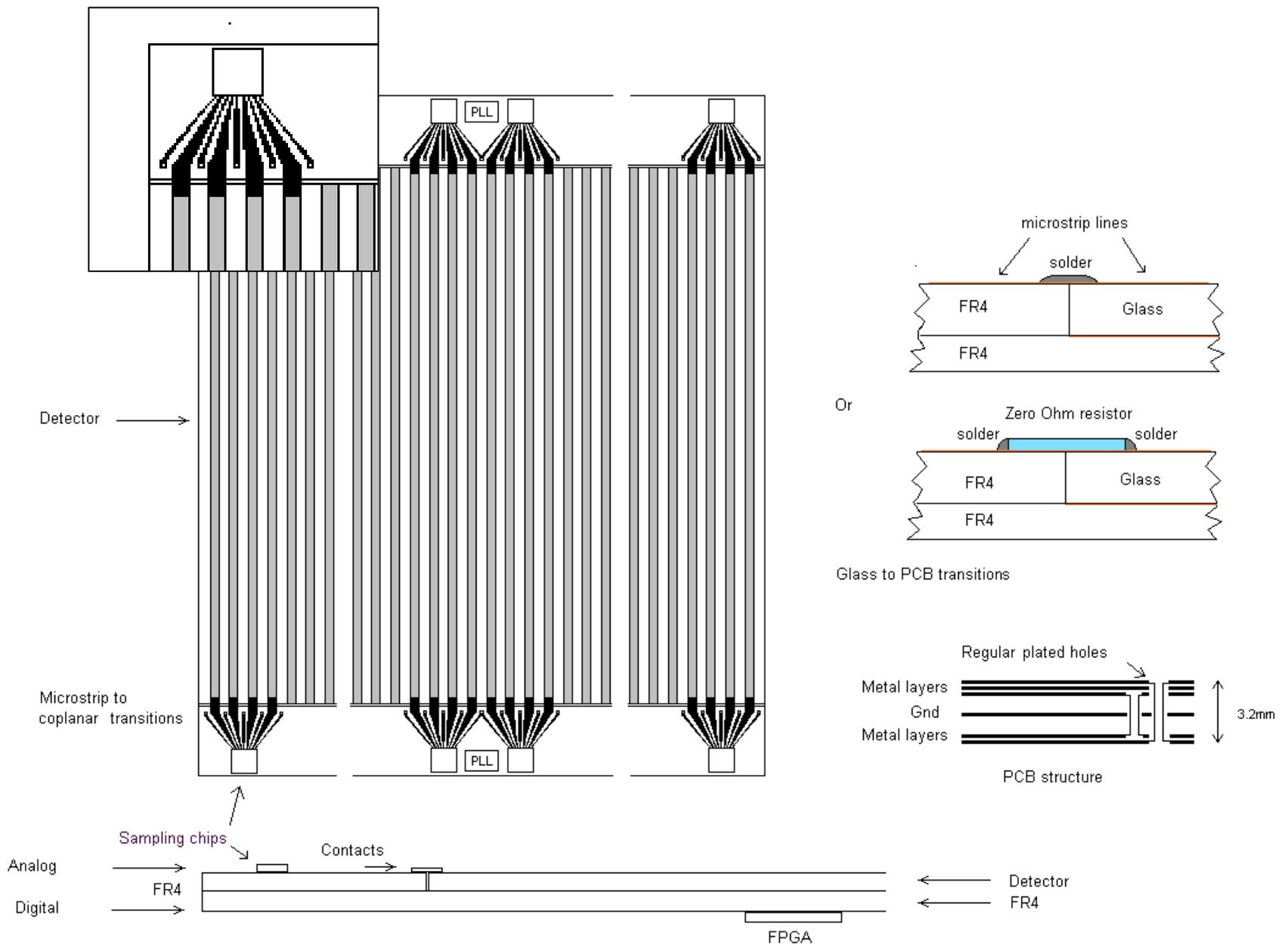


1

This transition demonstrates a maximum insertion loss of 1 dB over the frequency range from 10 GHz to 40 GHz with a value of 0.4 dB at 20 GHz.

2

The fabricated transitions in back-to-back configuration provide insertion loss less than 0.7 dB per transition and return loss better than 10 dB for frequencies from 7 GHz to over 40 GHz and from DC to over 20 GHz, respectively.



# Summary

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- ▶ Work in progress
- ▶ Difficult to simulate
- ▶ Will be measured at Hawaii with network analyzer
- ▶ Different connecting structure could be tested