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Jitter Based Reconstruction of Transmission Line Pulse Using On-Chip Sensor

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Abstract : This paper discusses a method to reconstruct internal high-frequency signals through subsampling techniques in an IC using an on-chip sensor. Though there are existing methods to internally probe and reconstruct high frequency signals through subsampling techniques; these methods have been applicable mainly for synchronized systems. This paper demonstrates a method for making such non-intrusive on-chip reconstructions possible also in non-synchronized systems. The TLP pulse is used to demonstrate the experimental validation of the concept. The on-chip sensor measures the voltage in an internal node. The jitter in the input pulse causes a varying pulse delay with respect to the on-chip sampling command. By measuring this pulse delay and by correlating it with the measured on-chip voltage, time domain waveforms can be reconstructed, and the influence of the pulse on the internal nodes can be better understood.

Keywords : on-chip sensor, jitter, transmission line pulse, subsampling
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