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Vernier Stochastic TDC Architecture with Self-Calibration

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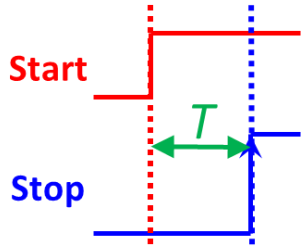
■TDC (Time-to-Digital Converter)

— Measurement of the time interval *T* between two edges

— Its digital output *Dout* ∝ *T*

→ Key component in nano-CMOS electronics



■Proposed TDC Architecture

◇Vernier technique (using two delay lines)

◇Stochastic topology
(using process variations)

⇨ Fine time resolution

◇Self-calibration
(using two ring- oscillators)

⇨ Good linearity

All digital circuit