MCM Upgrade Status

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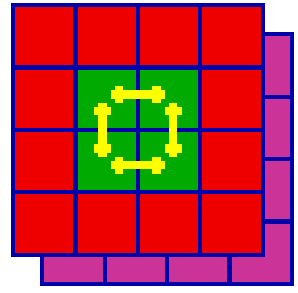
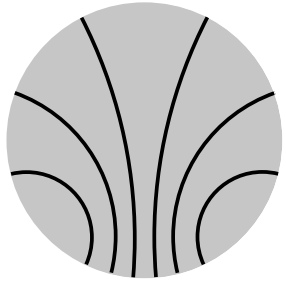
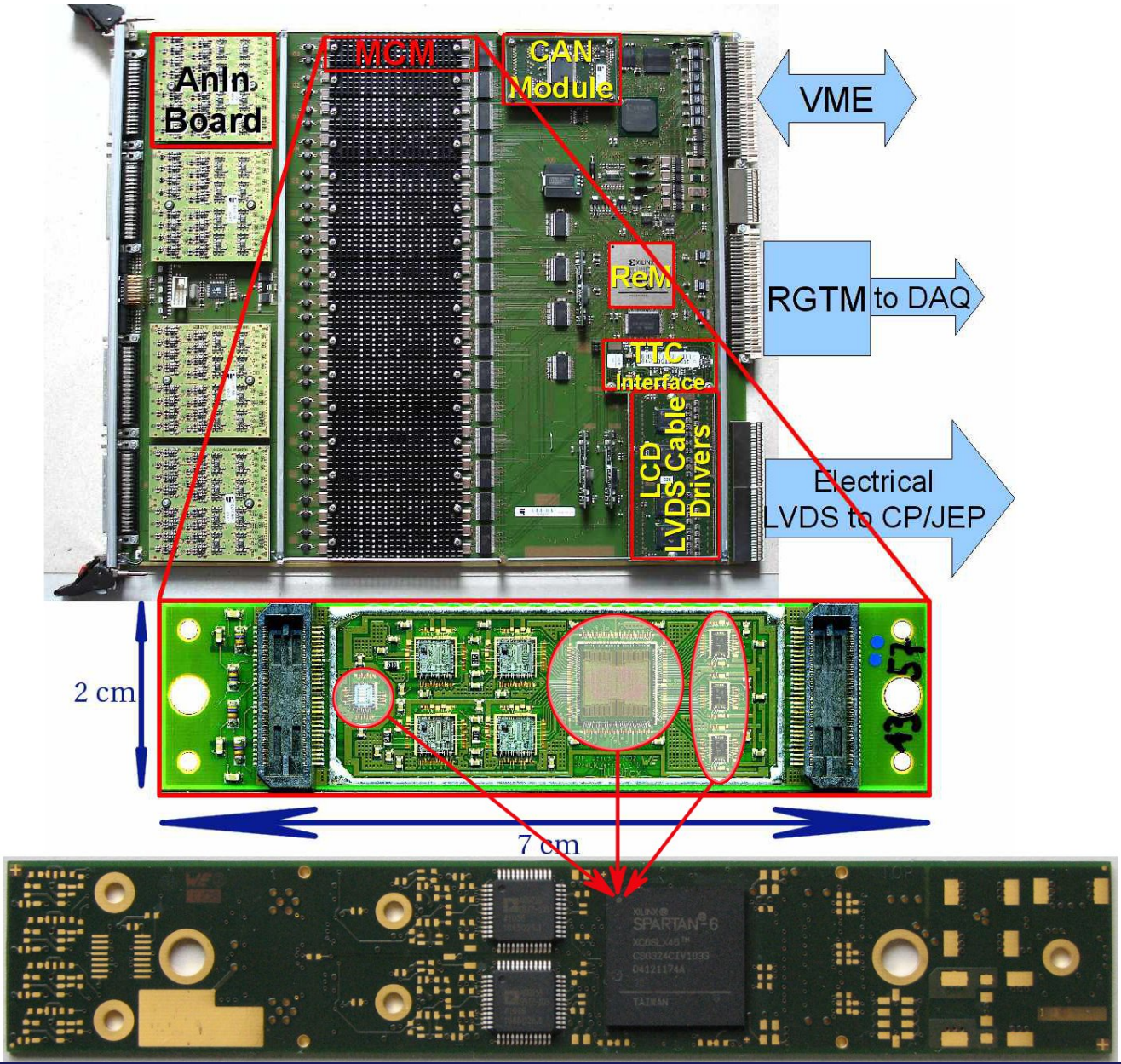




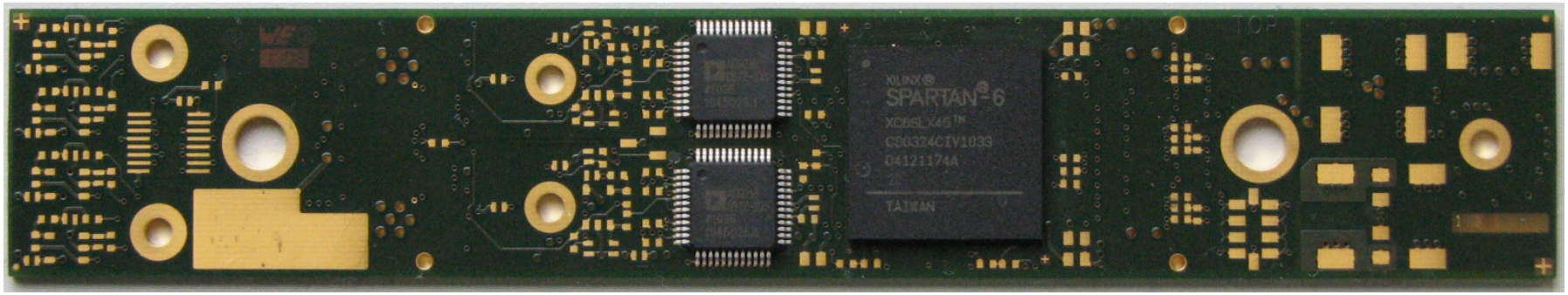
Level-1 Calorimeter Trigger Joint Meeting
Cambridge, 23-25 March 2011

Outline

PreProcessor Module and the New MCM

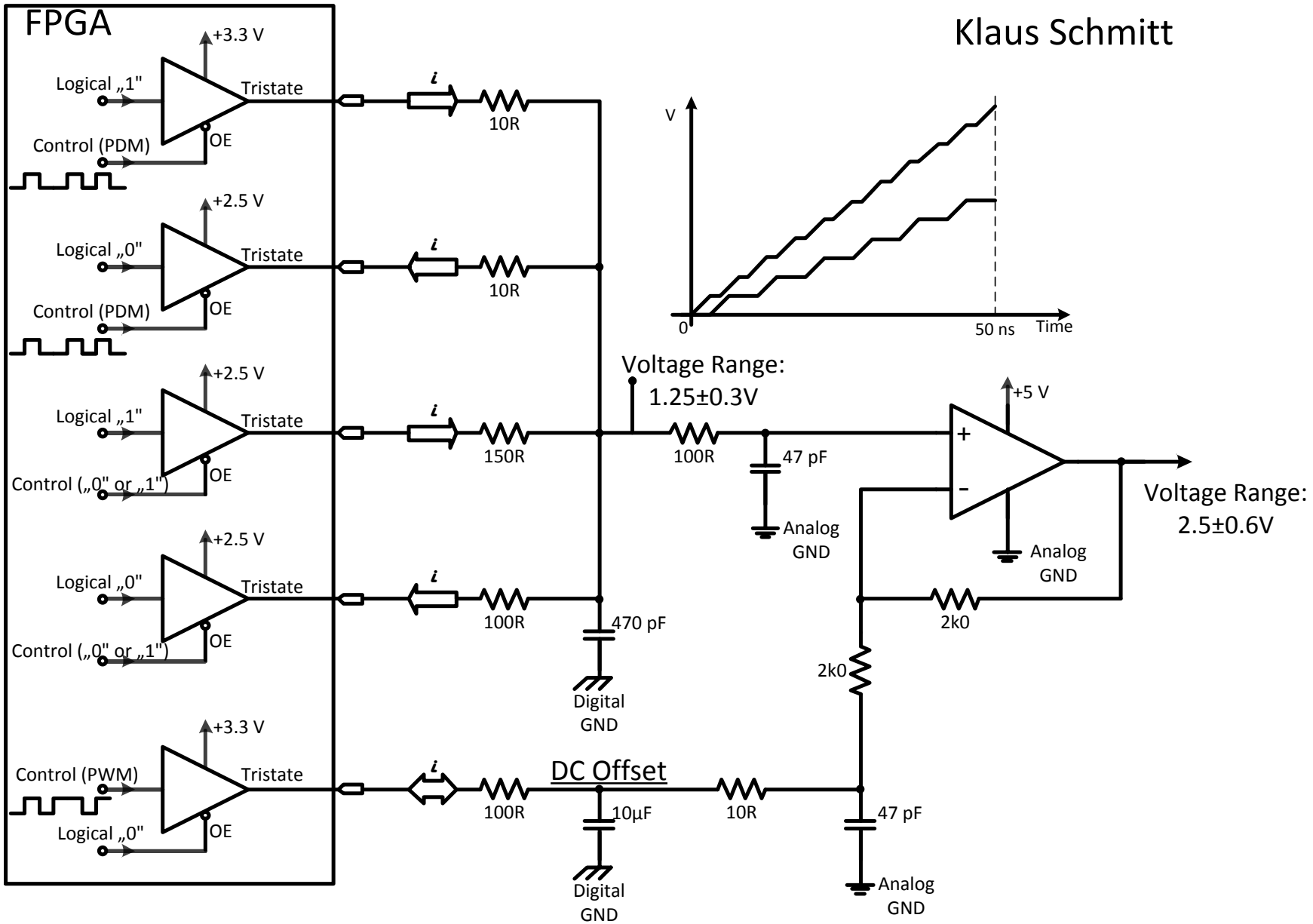


Selected nMCM Components



- AD9218 – dual $105MHz$ $10bit$ FADC (running at $80MHz$)
- ADA4939-2 OpAmp's (Single-ended-to-differential conversion)
- Xilinx Spartan-6 (SC6SLX45) FPGA in the CSG324 (15x15) package
- Numonyx M25P16 Serial Flash Memory (for the FPGA configuration bitstream and the Module ID)
- LTC3521 DC/DC Converters
- Analogue $1ns$ delay line

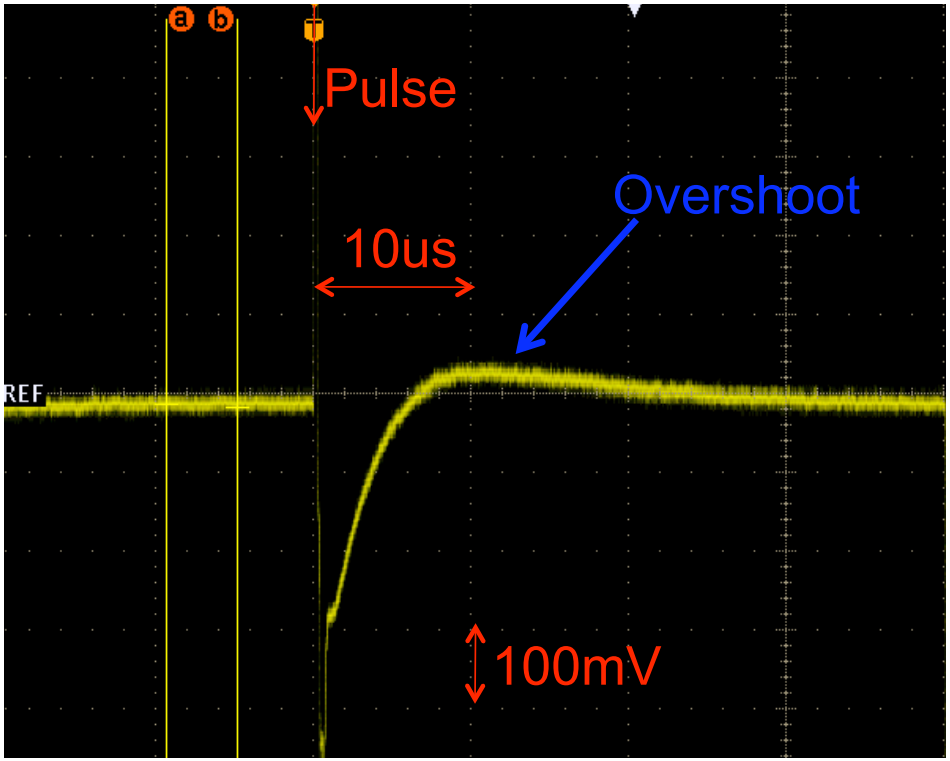
Test Signal Generation



Monica Dunford:

Pulse Shapes at Receivers

- At large charges the increase in the baseline after the undershoot is clear



Using the baseline before the pulse as a reference

At 10us → ΔV~40mV

At 30us → ΔV~0mV

Exists even at the lower charges. For 50 pC per PMT

At 10us → ΔV~3mV

At 30us → ΔV~0mV

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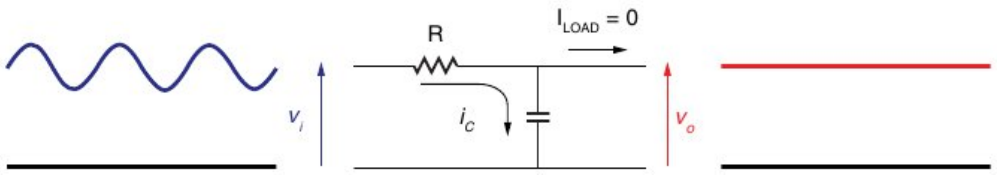
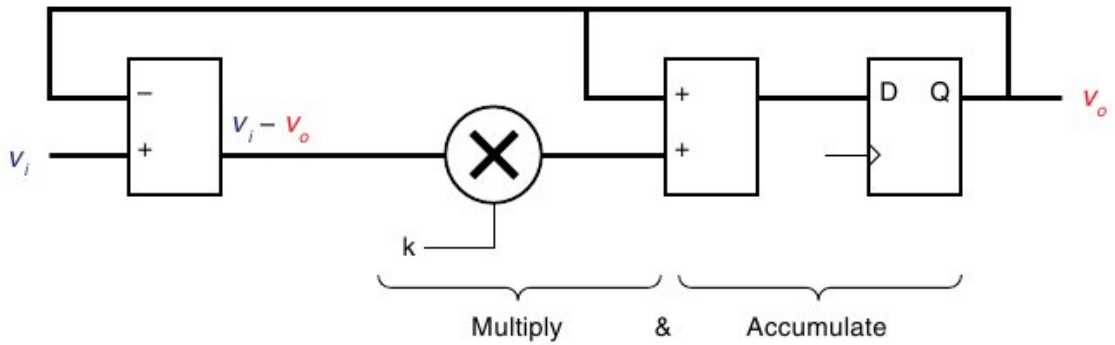
DC Offset Subtraction

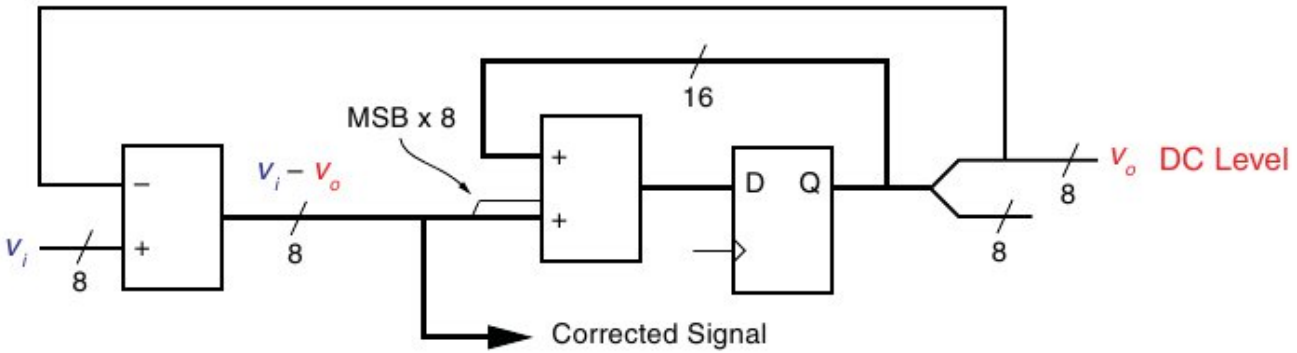


$$k = \frac{\Delta T}{R \times C}$$

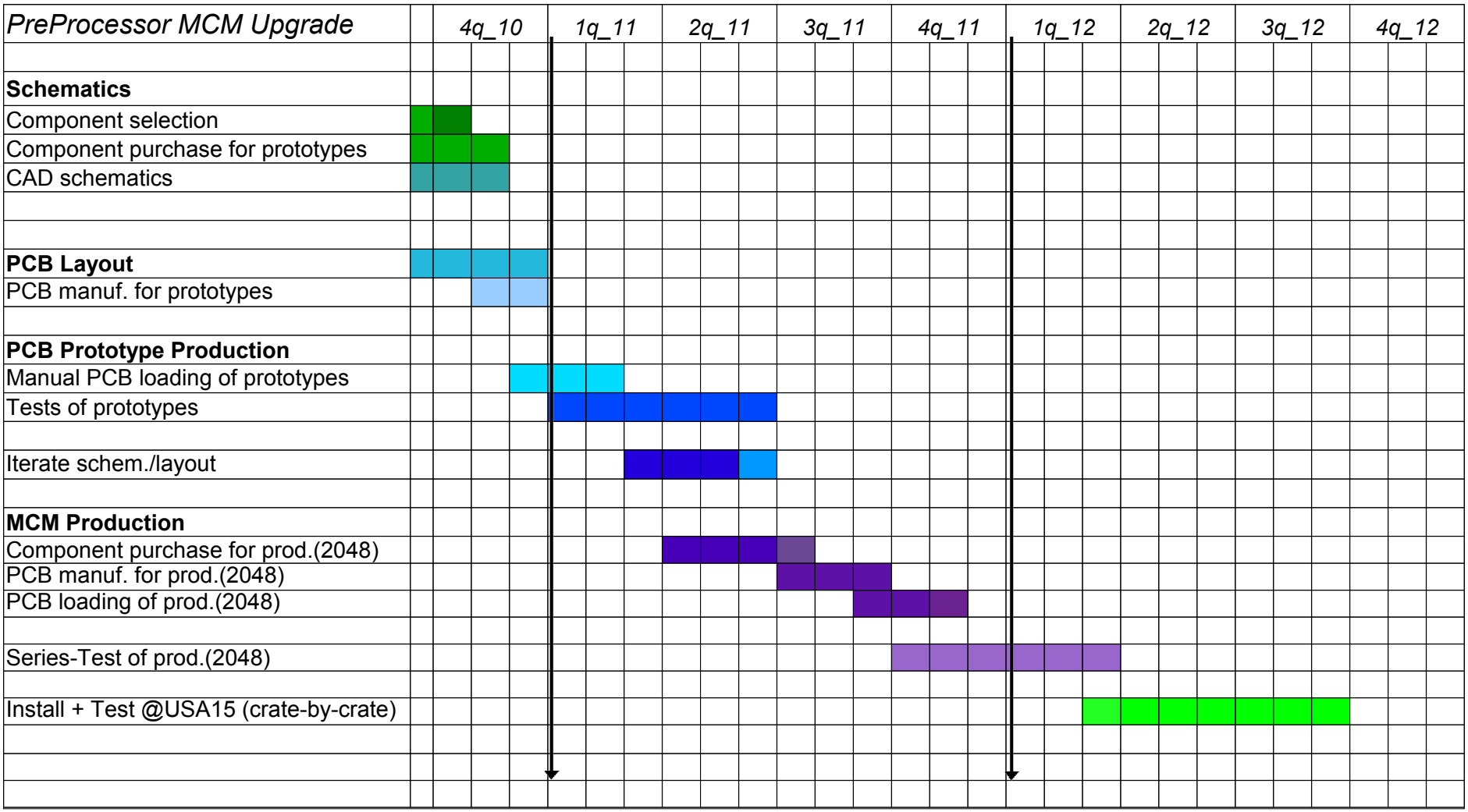
ΔT is defined by the digitisation frequency.
Digital representation of this circuit is:



or, if $k = \frac{1}{2^n}$:



Schedule


PreProcessor MCM Upgrade
4q_10
1q_11
2q_11
3q_11
4q_11
1q_12
2q_12
3q_12
4q_12
Schematics
Component selection
Component purchase for prototypes
CAD schematics
PCB Layout
PCB manuf. for prototypes
PCB Prototype Production
Manual PCB loading of prototypes
Tests of prototypes
Iterate schem./layout
MCM Production
Component purchase for prod.(2048)
PCB manuf. for prod.(2048)
PCB loading of prod.(2048)
Series-Test of prod.(2048)
Install + Test @USA15 (crate-by-crate)