LED Test Board

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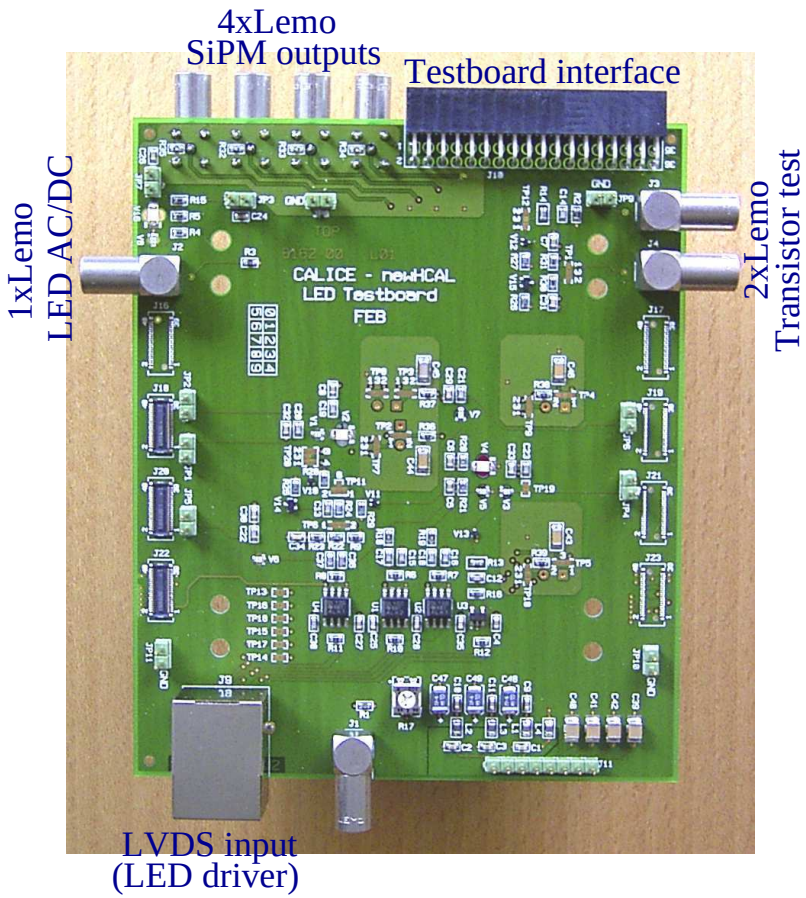
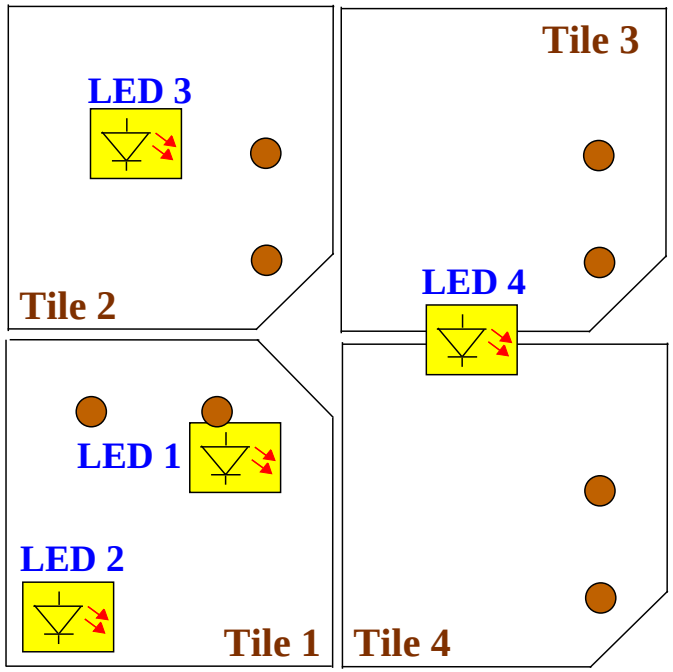
Overview

LED Test Board: Description

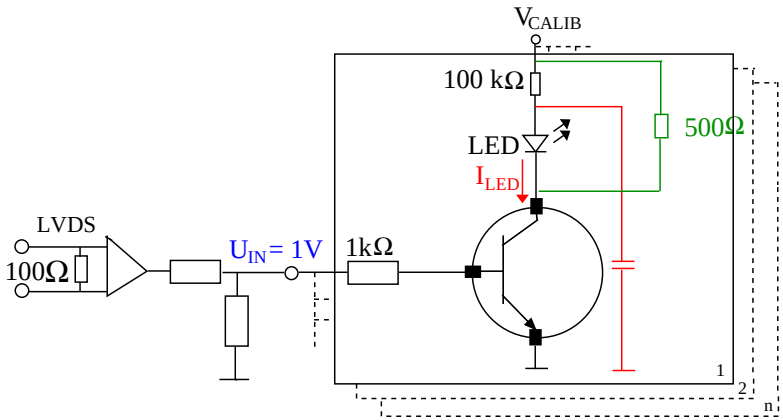
1. built in collaboration with the FEB group
2. 2 test boards; each board contains 4 **UV** LEDs
3. Purpose: **light calibration**



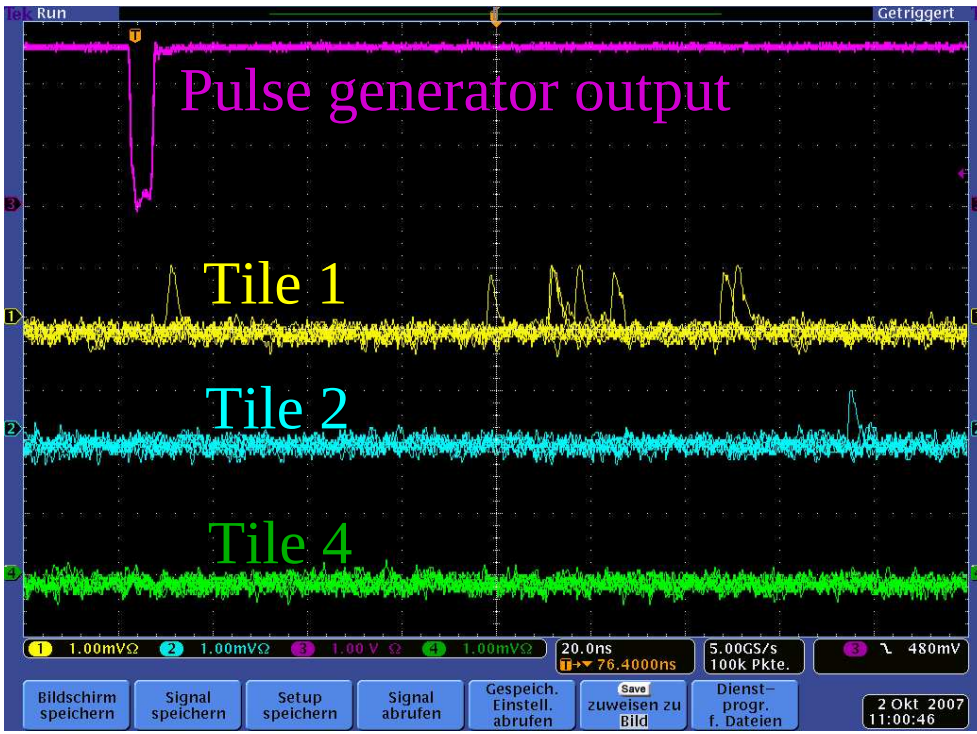


Tests with LVDS Input (I)

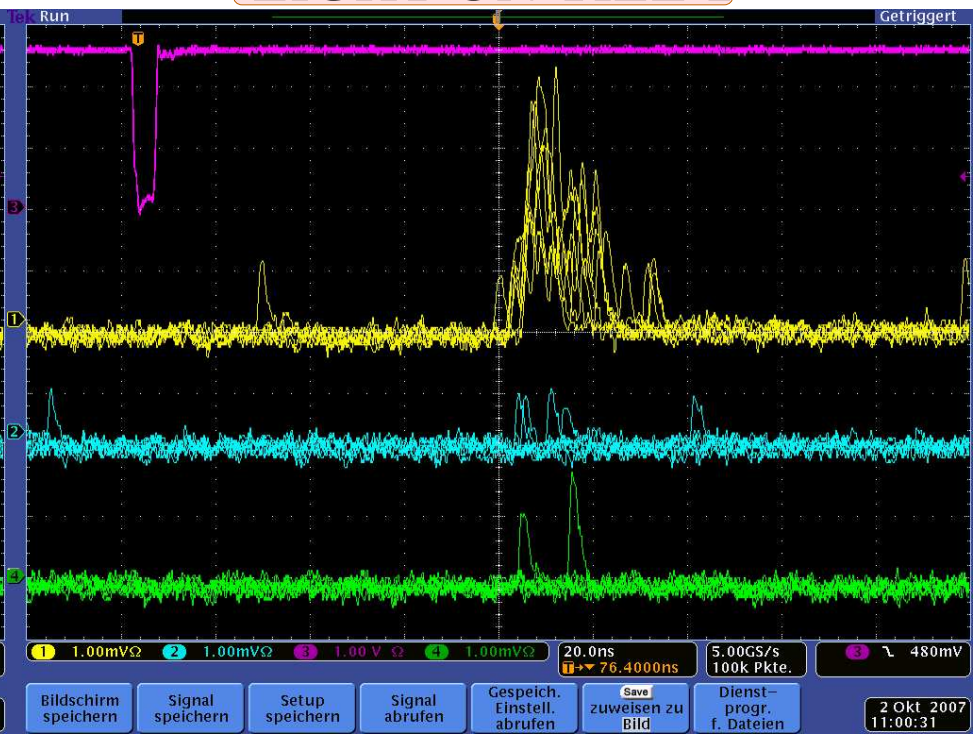
- **LVDS**=*low voltage differential signaling*
- Advantages: low noise, low power dissipation, high speed



NO LIGHT

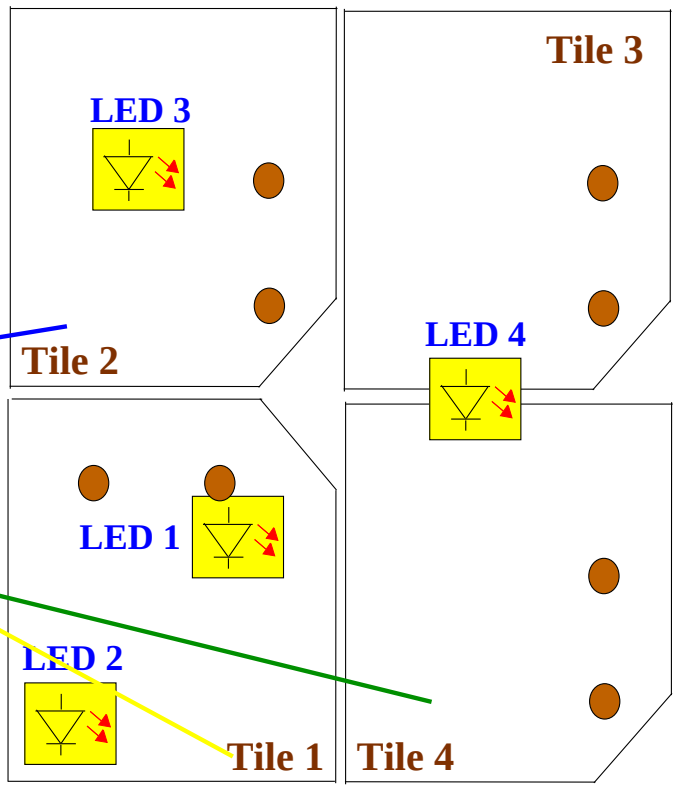


LIGHT ON TILE 1



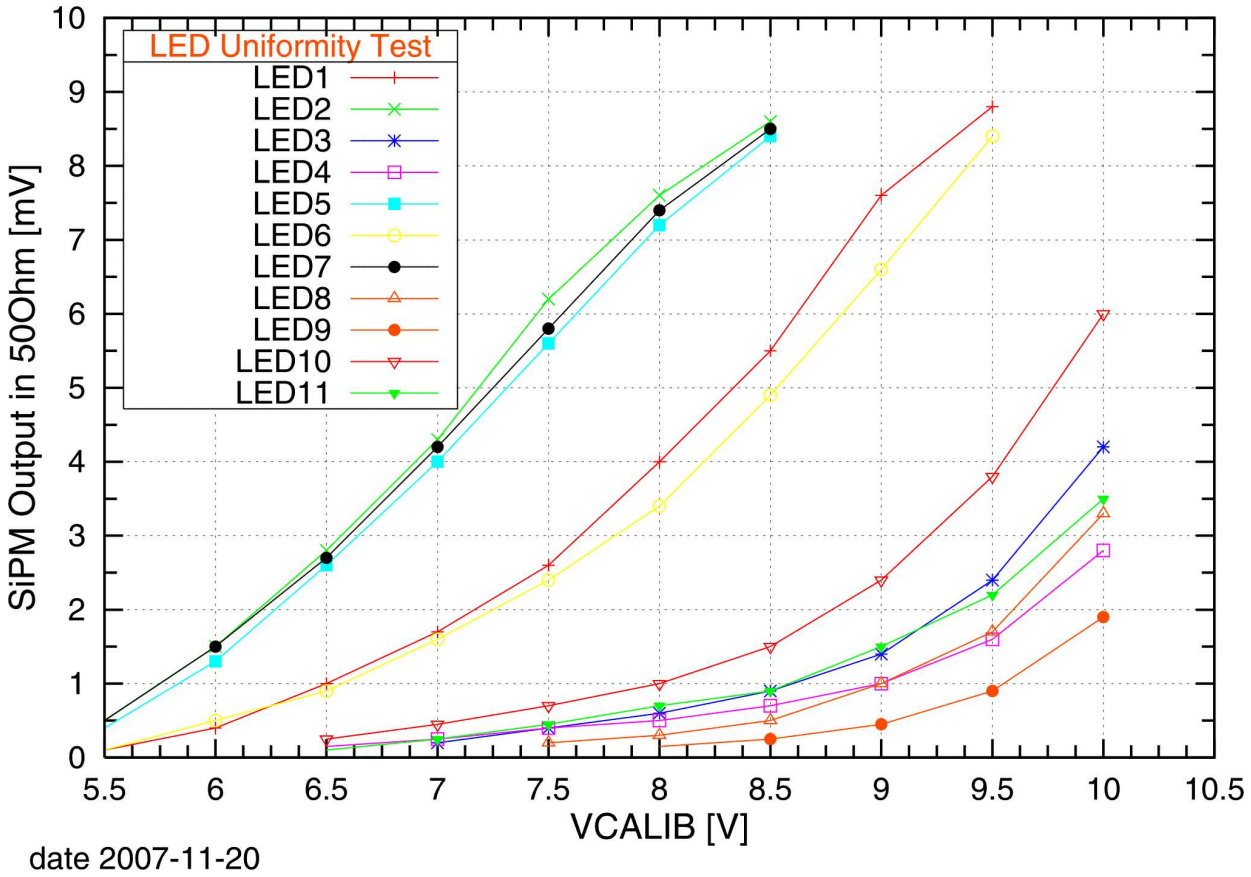
Tests with LVDS Input (II)

1. SiPM on tile 3 not used (long discharge)
2. Average of SiPM signals: $< 5\%$ optical (electrical?) cross-talk



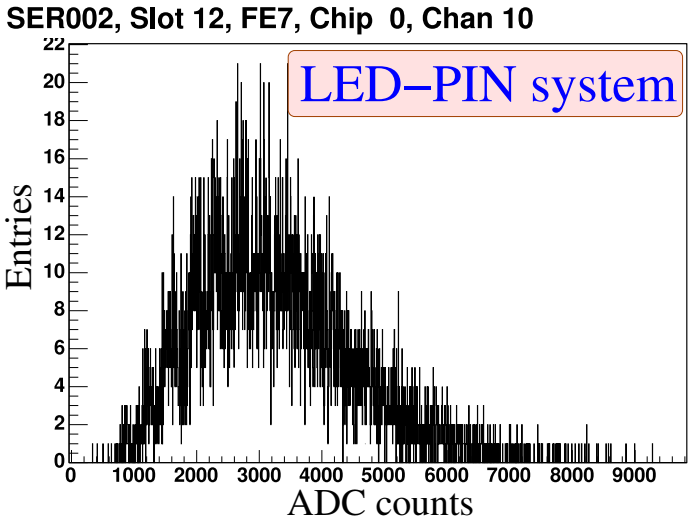
LED Uniformity Tests (Matthias Reinecke)

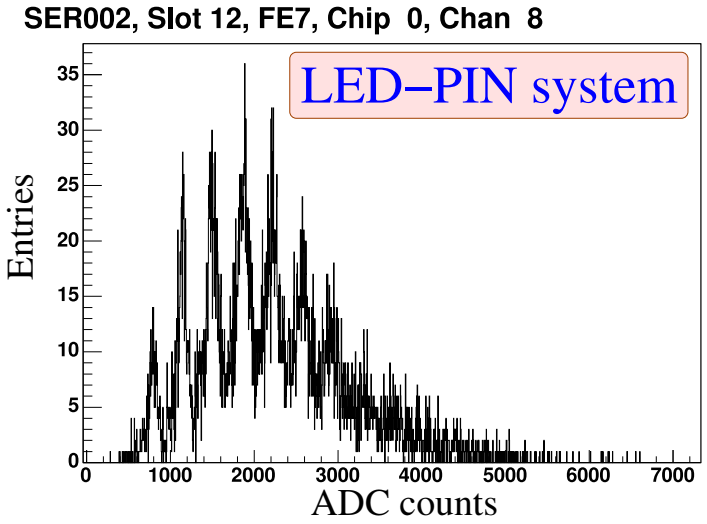
1. SiPM amplitude measured on a scope (in averaging mode) as a function of input voltage, for different transistors, different LEDs, etc
2. Sensitivity clusters observed (factor 2 variations within a cluster)

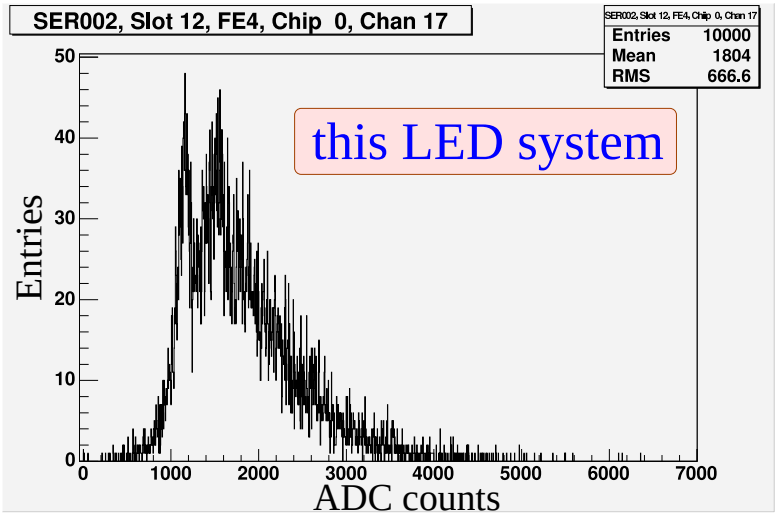


Tests in the Tent

- Need to measure **dynamic range, cross-talk** etc. by integrating
  $\Longrightarrow$ test in the tent, with the LED board coupled to the ASIC chip and to the DAQ







Summary and Overview

1. Two test boards built; each contains 4 UV LEDs on SiPM tiles
2. First tests with LVDS input promising, single photon spectra visible in averaging mode
3. LED uniformity tests showed large variations in the SiPM output
   $\Longrightarrow$ Possible solutions: LED preselection, driving circuit adaptions...

4. First light at the end of the ... pedestal seen ☺
5. Blue LEDs (430 nm) to be checked (already ordered)
6. Establish the LED properties in a realistic environment