Experience with R4 Module

ARCS Testing at ETHZ

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Module Test Meeting, CERN April 20, 2004

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Statistics

- Received 28 “final” R4 modules and bonded 27
- One module badly damaged, $I_{leak.} > 10\mu$A at 5 V
- Of the 27 modules bonded, 26 finally declared o.k.
- One module declared bad due to 10 smashed hybrid-pa wires (operator fault)
- One failed the pinhole test $\Longrightarrow$ signal dropped at LED intensities > 240, was declared o.k. by Michael Poettgens: The max. value of $I_{leak.}$ was set too low $\rightarrow$ The DEPP reduced voltage too much.
- $I_{leak.}$ o.k. except for one ($\sim 1\mu$ A). Small changes in $I_{leak.}$ from before to after bonding $\Rightarrow$ plots

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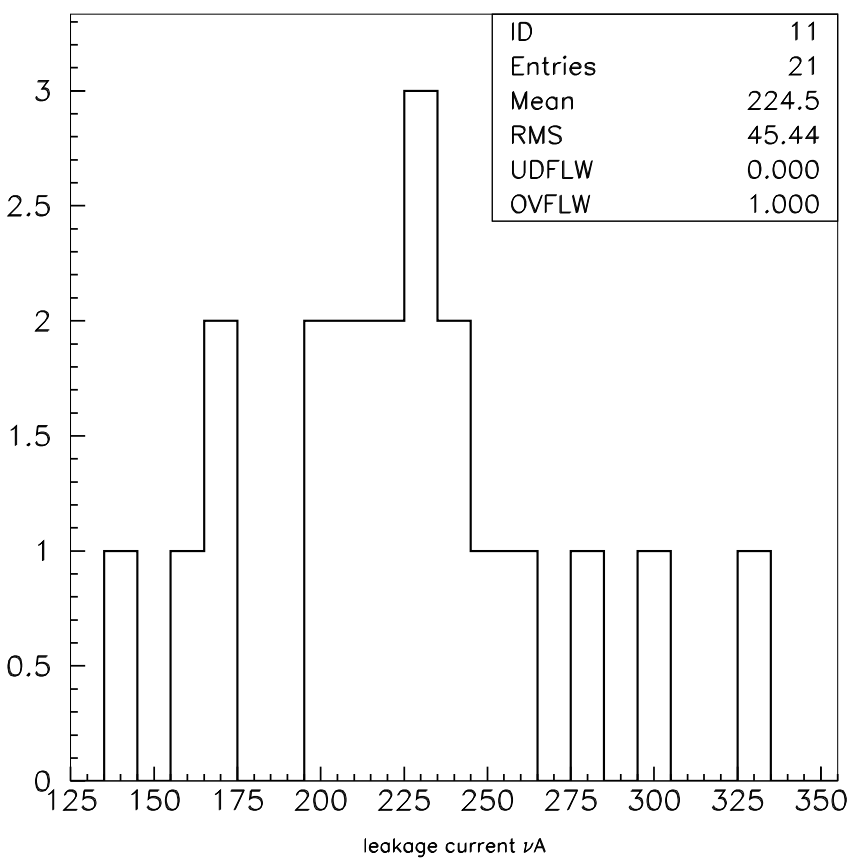
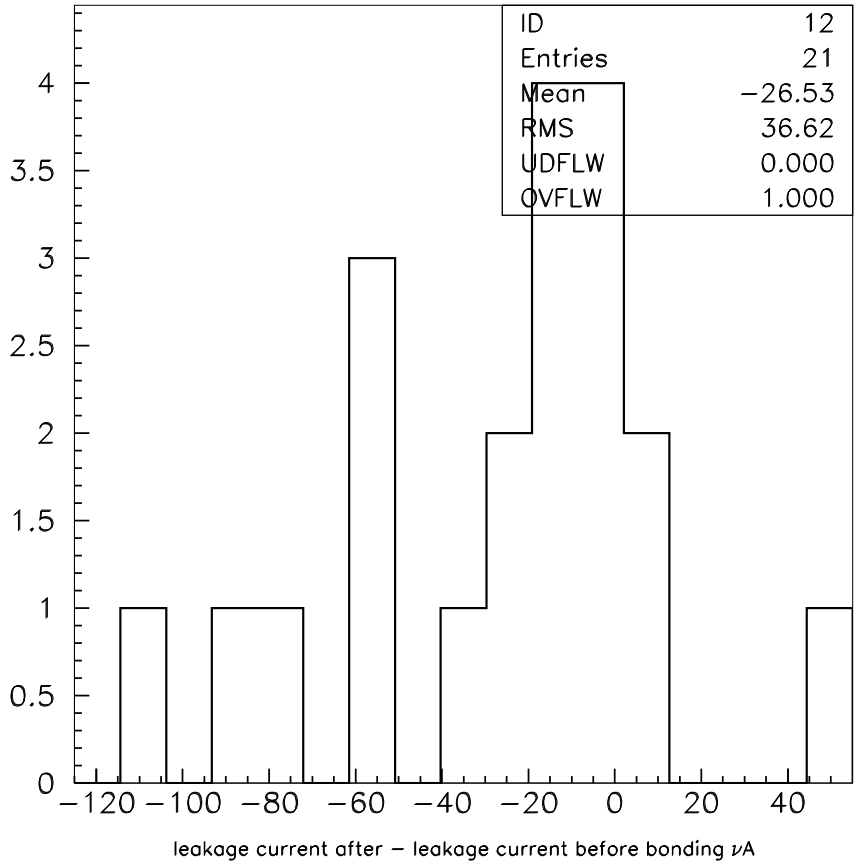
Leakage current





$< I_{leak.} >$ (225± 45) nA $\Delta I_{leak.} = -(27 \pm 37)$ nA

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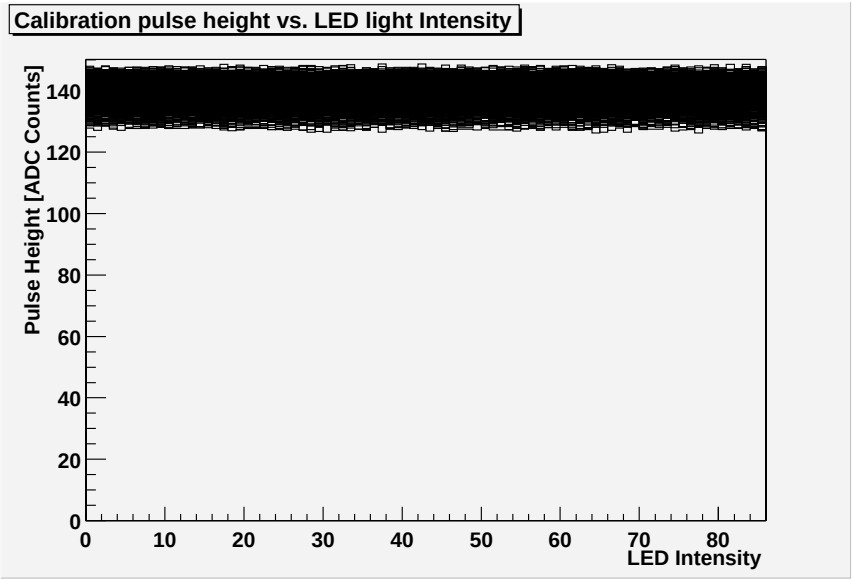
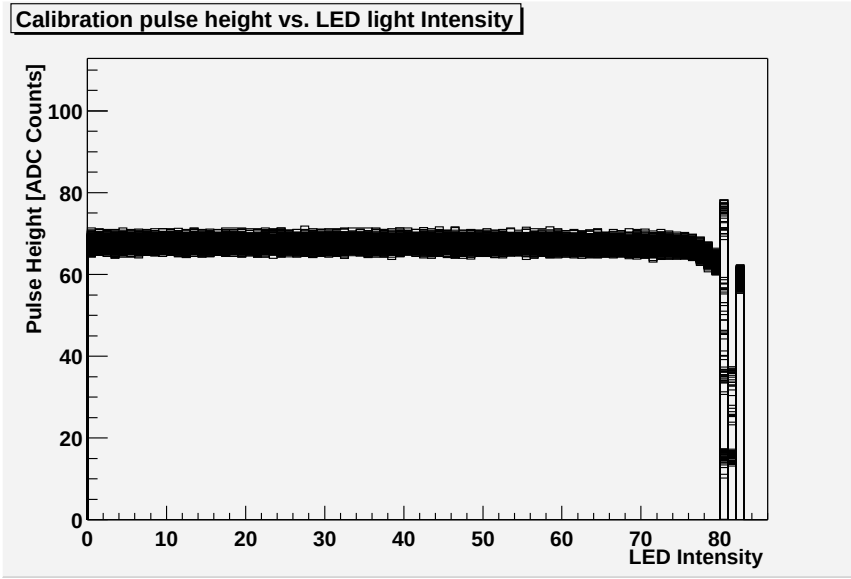
Pinhole to be or not to be





normal module

512 “likely PINHOLES”

$< \text{PulseH.} > \approx 135$ ADC c.

$< \text{PulseH.} > \approx 70$ ADC c.

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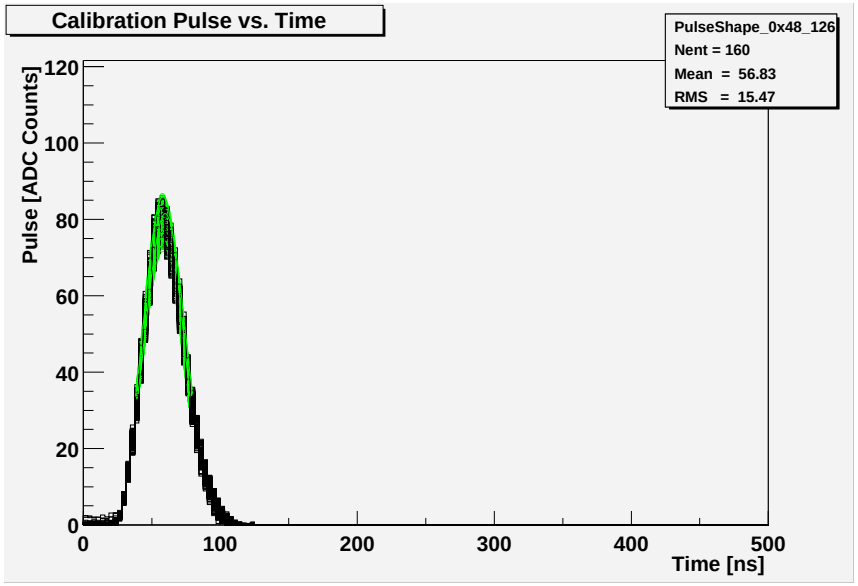
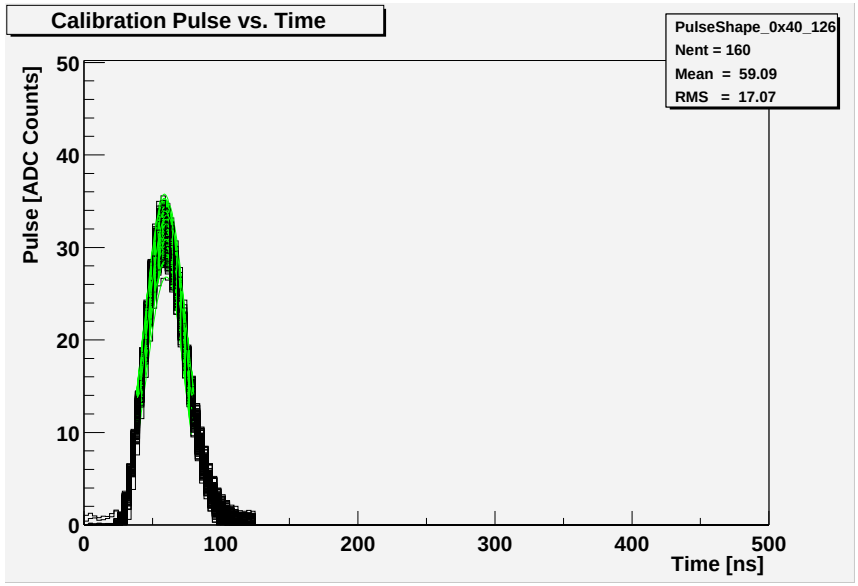
Pinhole to be or not to be





normal module

"512 likely PINHOLES"

max. Pulse H. ≈ 90 ADC c.

max Pulse H.≈ 35 ADC c.

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Summary

- We have tested 27 “final” R4 modules with ARCS. Could have done much more!!!
- 26 modules are o.k.
- Central DB was used, but did not yet accept ARCS xml files
- Root files from the 27 ARCS tests are on: http://cmsdoc.cern.ch/ ~klaus/production.html
- Still some open questions: cut parameters for inner TEC modules, $I_{leak.}$ limit for inner TEC modules,....
- It would be nice to have an ARCS Helpdesk