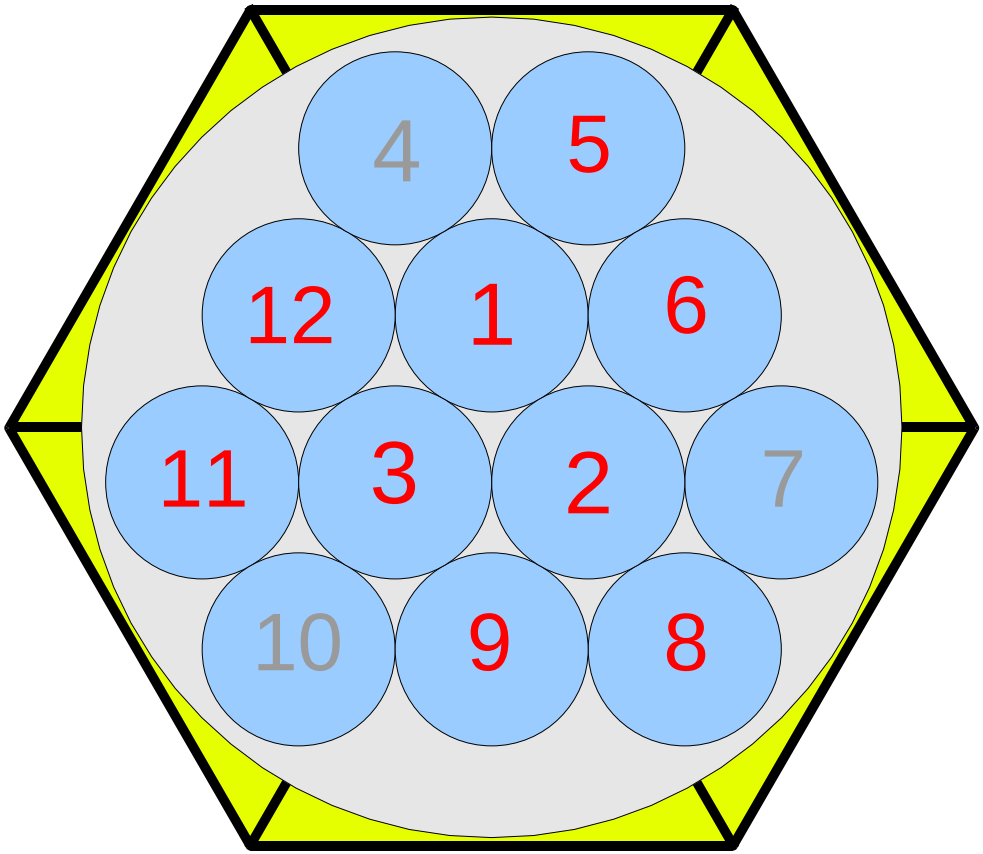
UV LED Test

Preliminary results from Prague:

- time stability
- r/phi anisotropy
- variation of 6 LEDs

Measurement setup

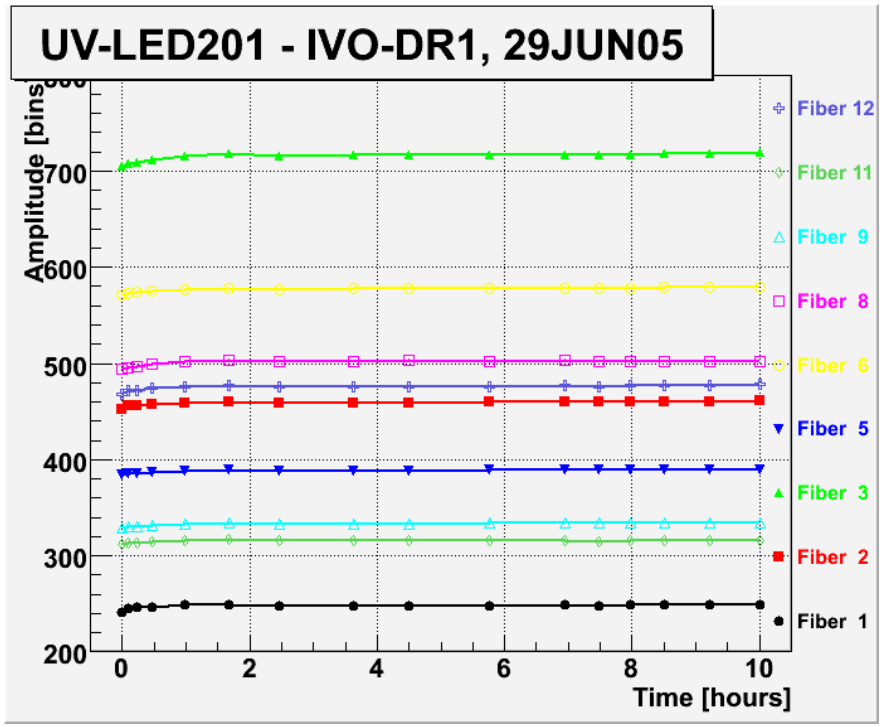


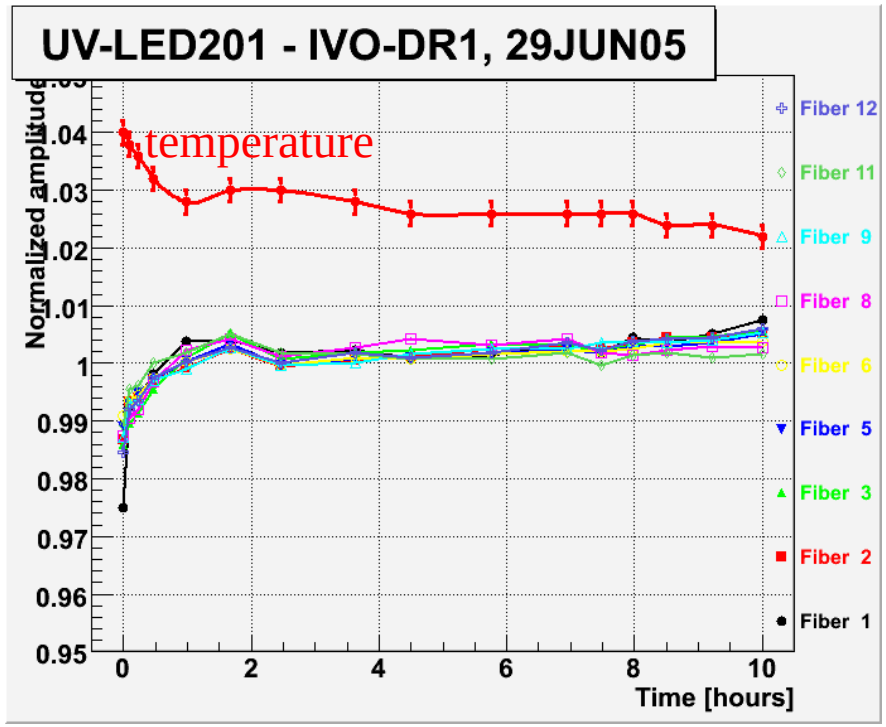
- UV-LEDs + Ivo's LED Driver

- Hexagonal (triangular) symmetry
- 9 fibers (1mm diameter) in use
- going to 9 APDs (G ≈ 5)
  + preamp → ADC
- fibers should be fixed in masks !
- correction on fiber LY and optical connections problematic
  → relative measurements

- no central fiber
- 3 radii simultaneously measured (0.58, 1.15, 1.76 cm)
- rotation of UV-LEDs by 60 degree 6 angle positions

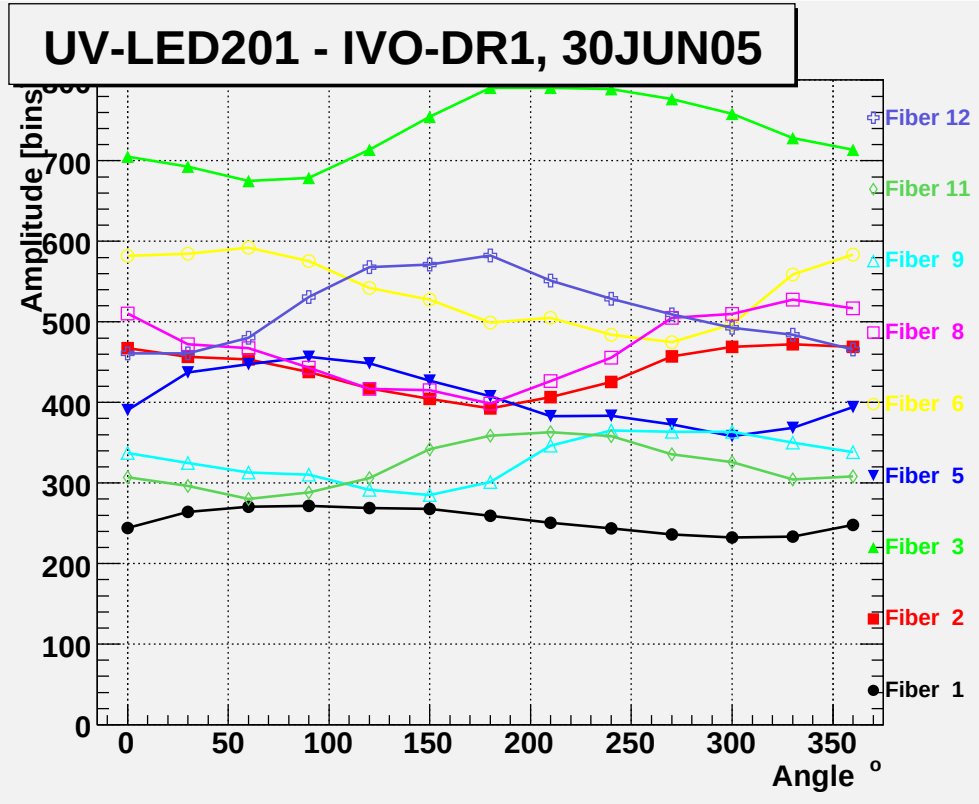
Time stability

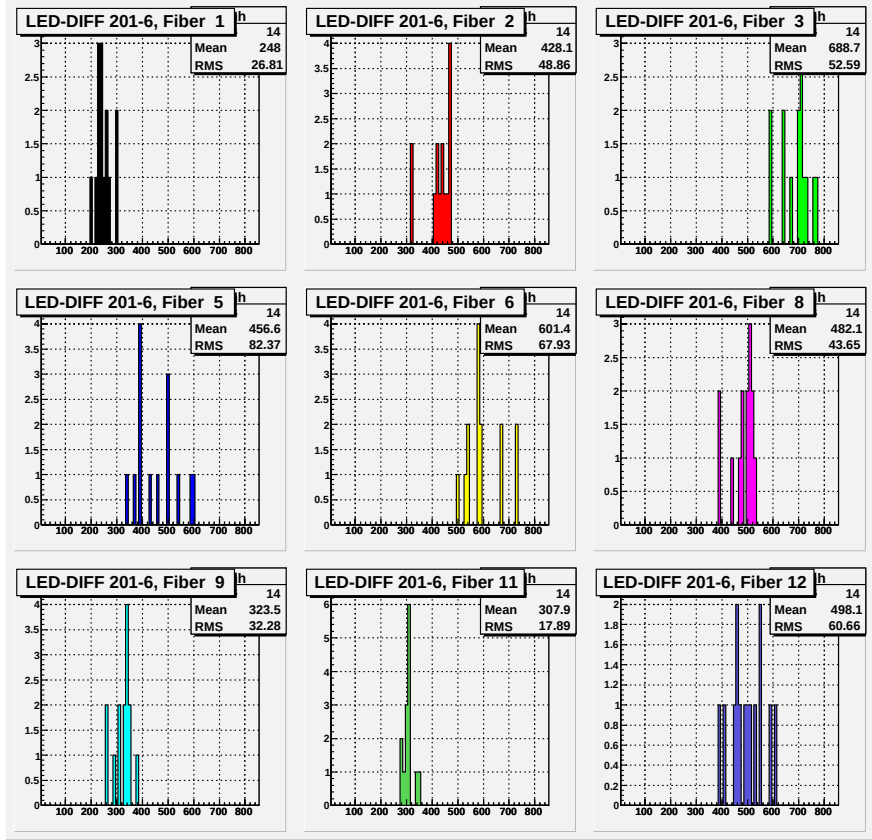




- 1 led @ 1kHz over 10 hours (>30 Mpulse)
- improving condition → < 0.5% variations
- temperature fluctuation Ampl(T) = 1.04 + (T[K]-307.9)/50
  in picture (→K down)

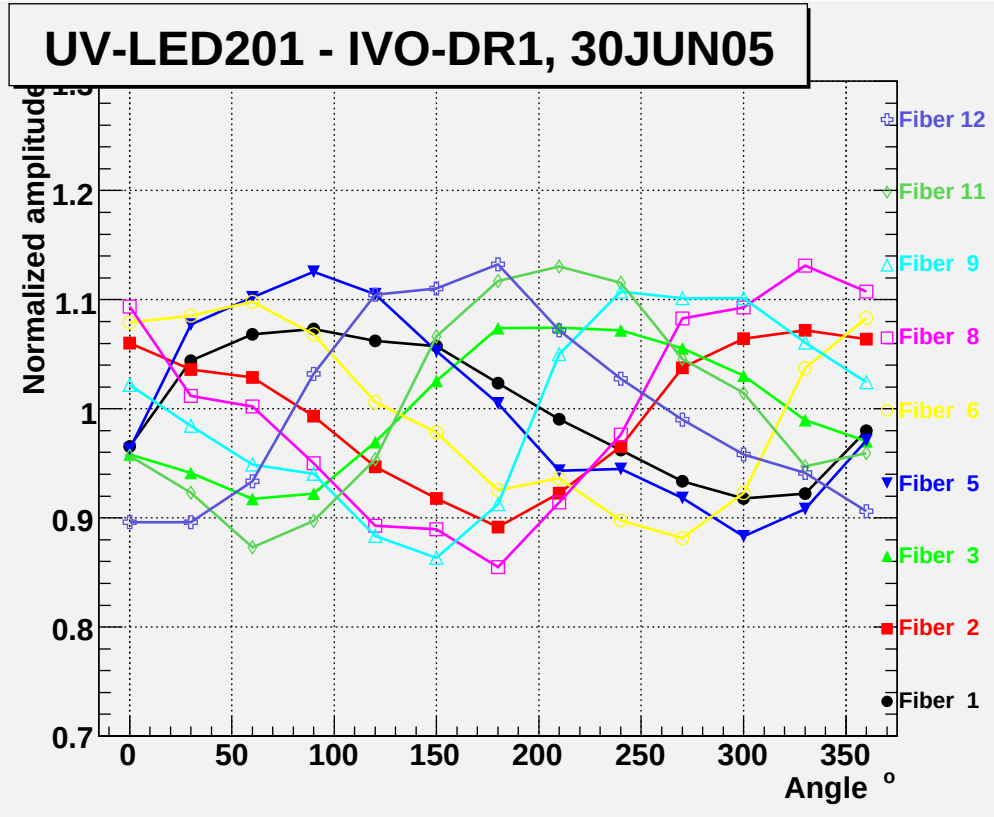
Angular measurements (I)

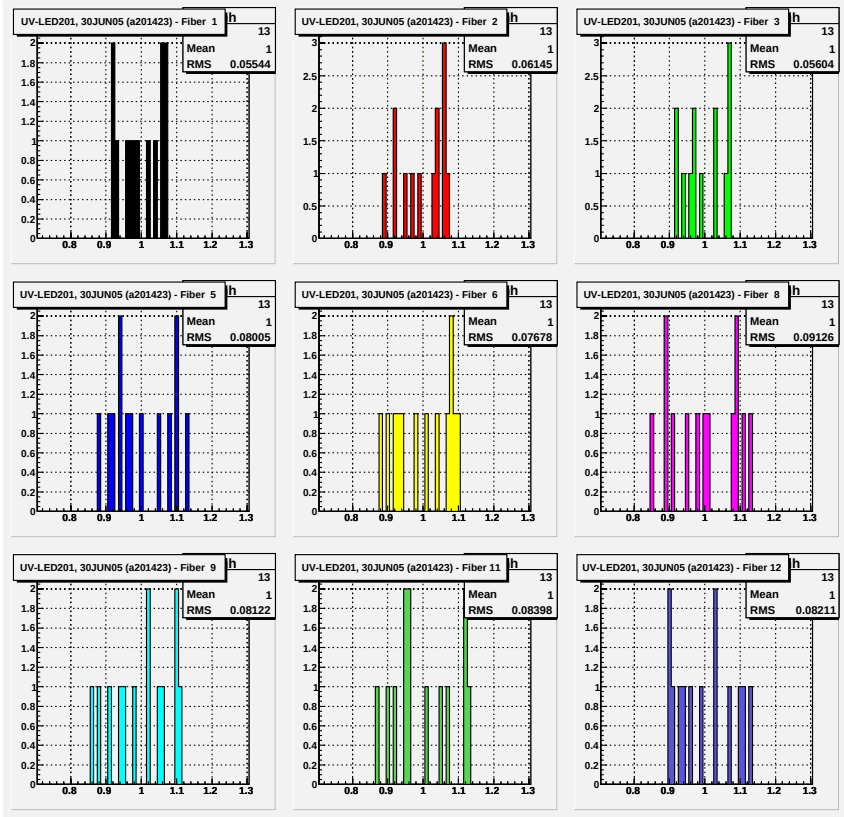




- Angular inhomogeneity is clear (same for 30 or 60 degree steps)
- phase shift observed for fibers @ same radii (120^{o} triangular shift)
  → light cone is not fully symmetric wrt. central point

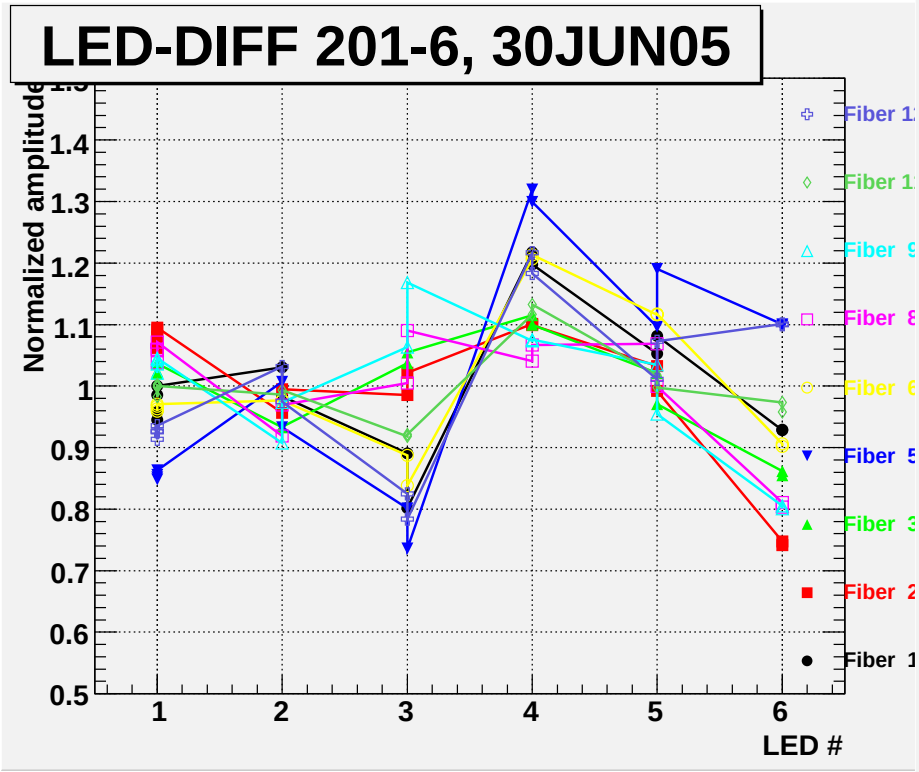
Angular measurements (II)

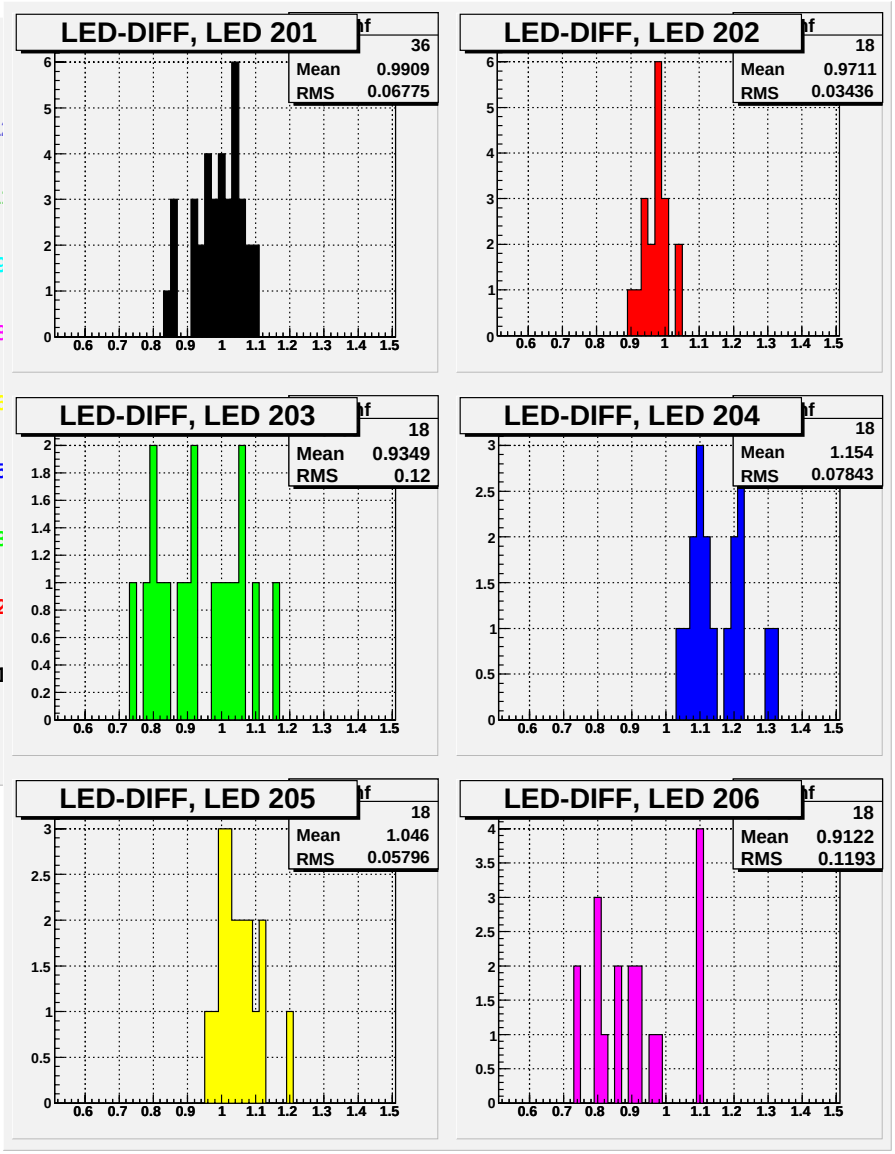




- Phi variation are below ± 15% from averaged
- RMS 5-6% for inner fibers, 8-10% for outer fibers (preliminary for a few pieces !)

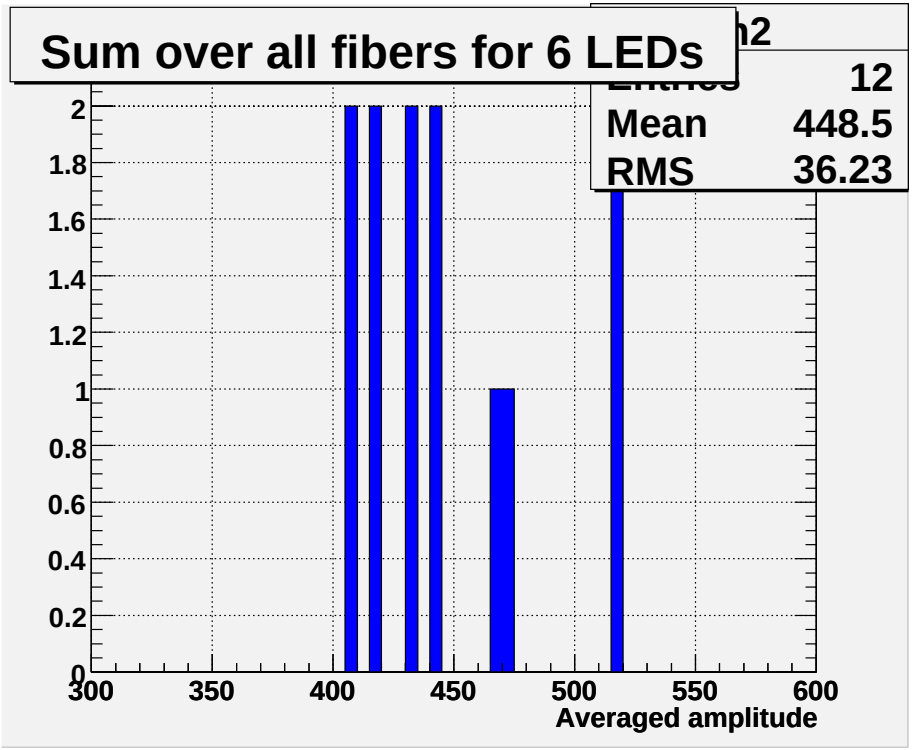
LED variation (I)

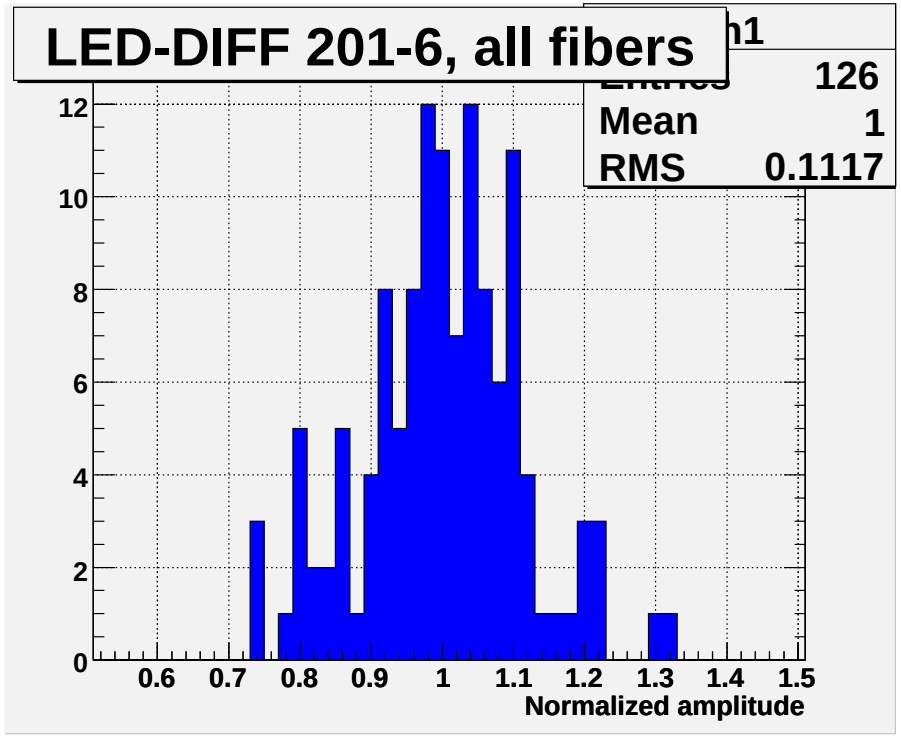




- some LEDs w/ large variations
  but not true for all fibers
  (φ=0 and 360 doubled)
- some w/ more LY (φ offset?)

LED variation (II)

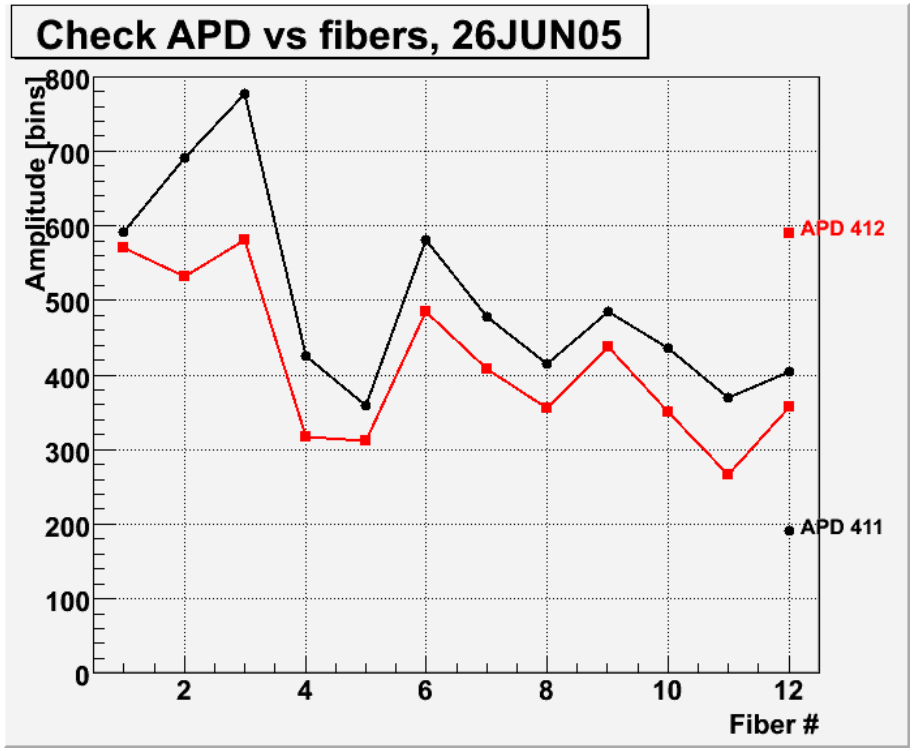


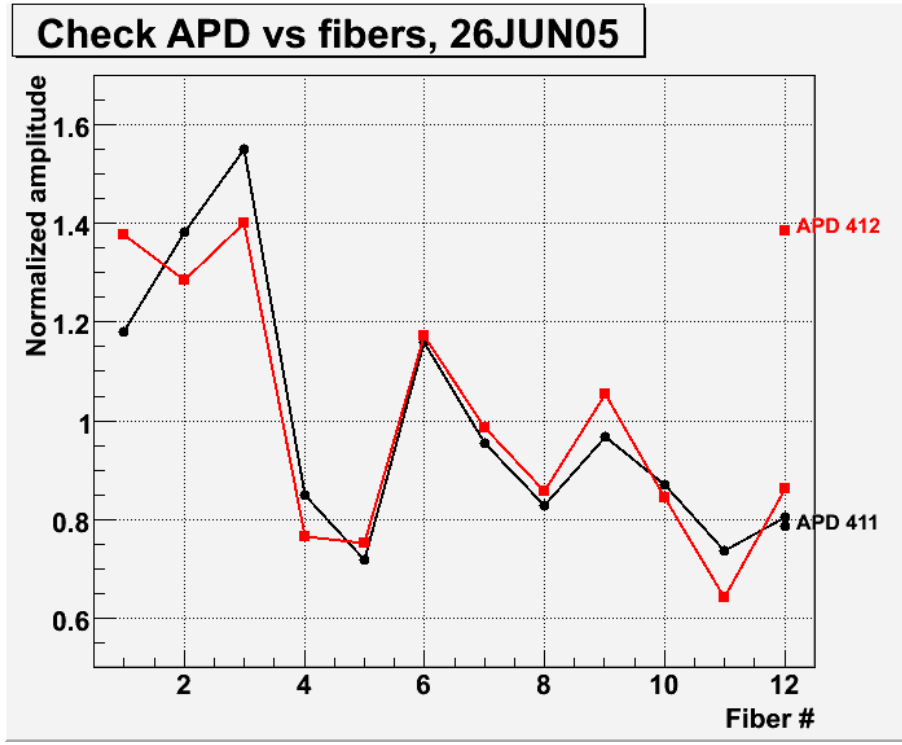


- total LY (9 fibers/led) differs about 10% among 6 LEDs (one w/ more light)
- relative amplitude over all fibers from 6 leds resluts in 11% RMS

Backup

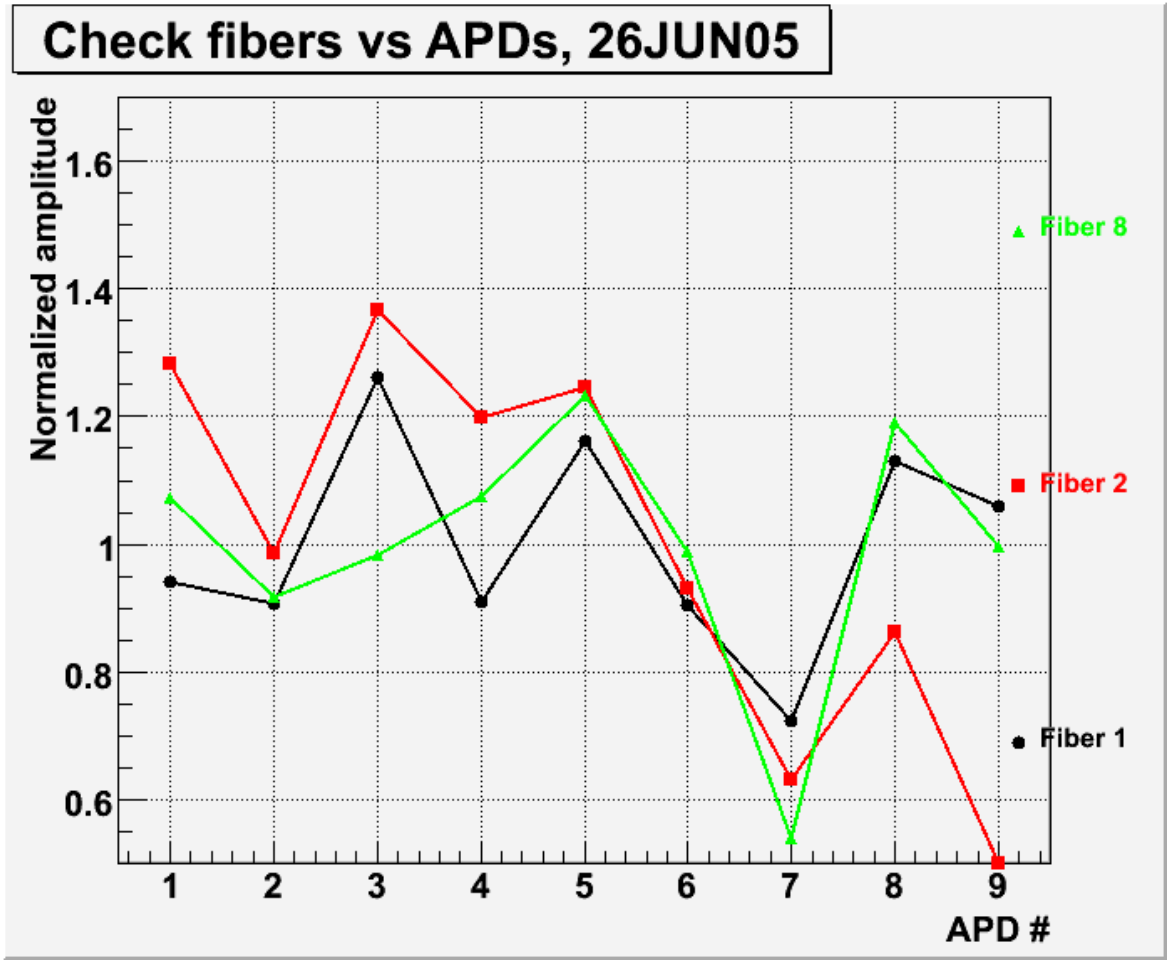
Absolute measurement





➔ Bad reproducibility in ‘light running’

Absolute measurement



- different gain of APDs

➔ Bad reproducibility in ‘light running’