PRELIMINARY

Fiber Attenuation Length

Methodology Evaluation

Regina Group

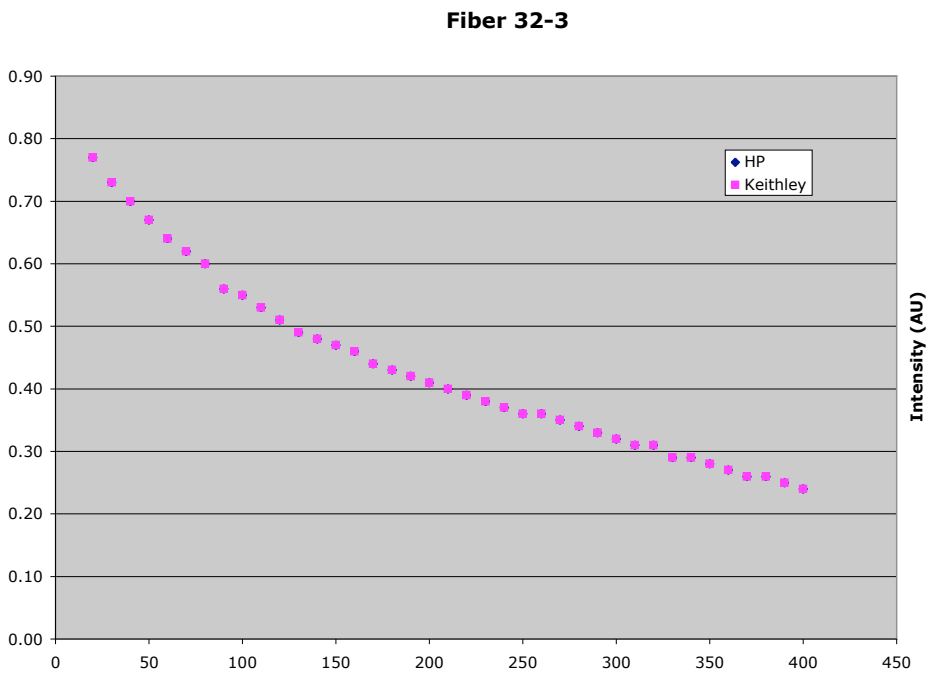
Objectives

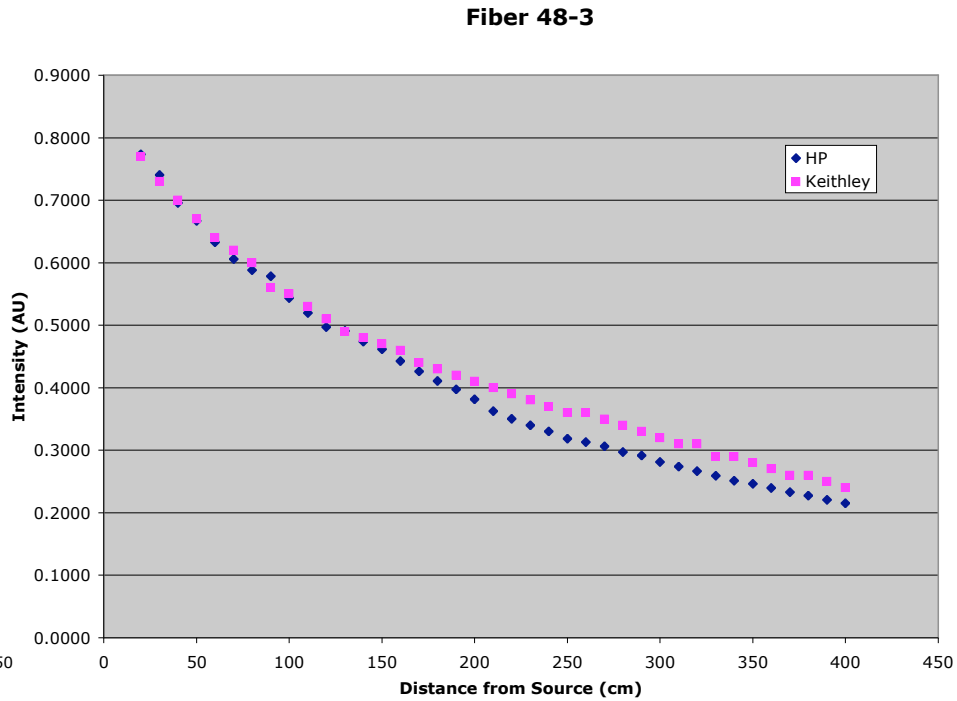
- Fiber First Article Evaluation
  - Measure large no of the 50 fibers, complete report
    - Bulk attenuation > 350cm
    - Effective attenuation > 300cm (with Bialkali PMT)
    - RMS < 10%
- Fiber Production QA
  - Develop effective, robust procedure
  - Design and install upgrades to setup
  - Test a small percentage of fibers
  - Use spectrophotometer for selected in-depth study

Overview

- Develop method to extract attenuation length quickly and reliably
- Use (calibrated) Hamamatsu S2281 photodiode read by picoammeter
- Test fiber sits in puckboard track, couples to photodiode using optical grease
- Three ammeters used:
  - Keithley 6487 picoammeter (SiPM work horse)
  - HP 3465A digital multimeter – *out of commission*
  - Keithley 617 electrometer (Undergraduate labs)

Stability of Results



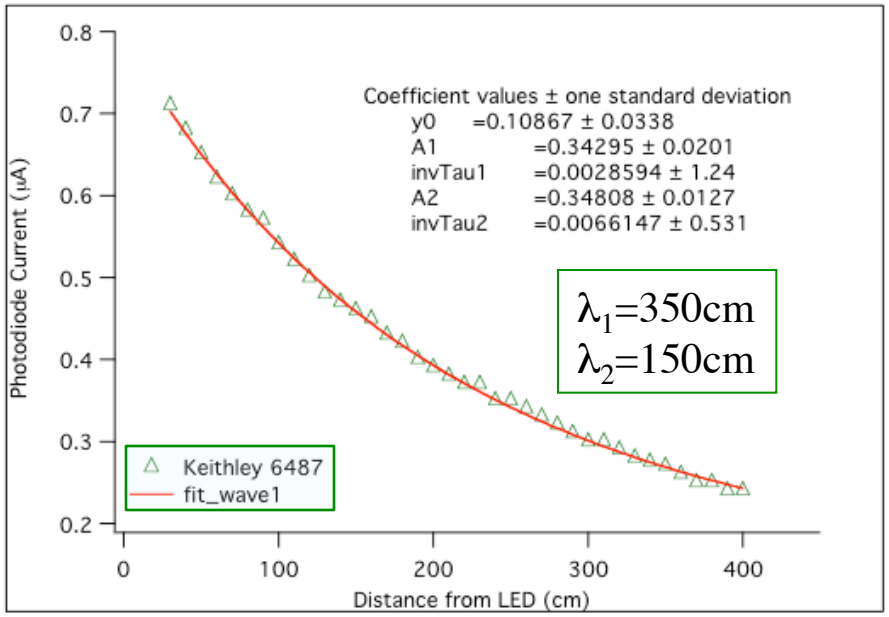


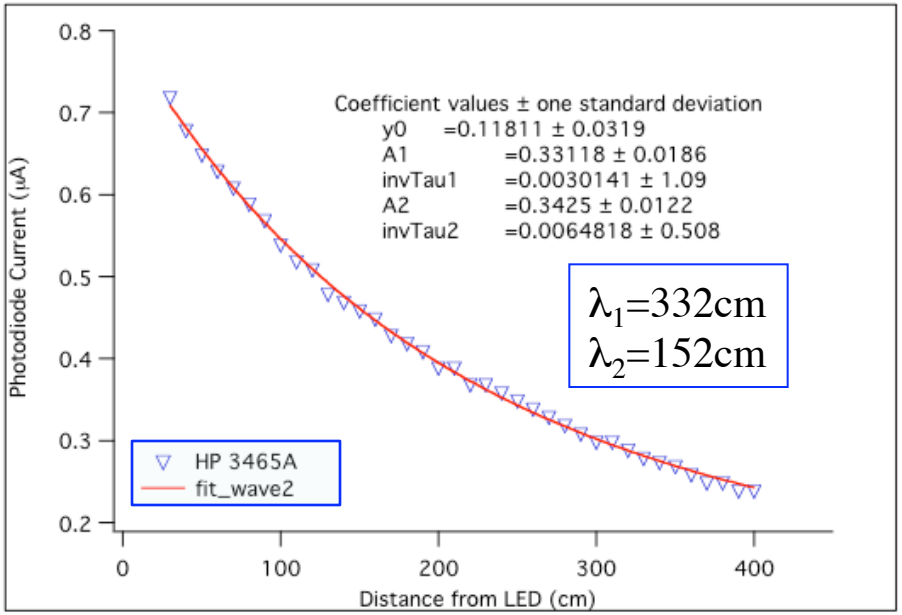
Perfect agreement

Fiber lifted off track

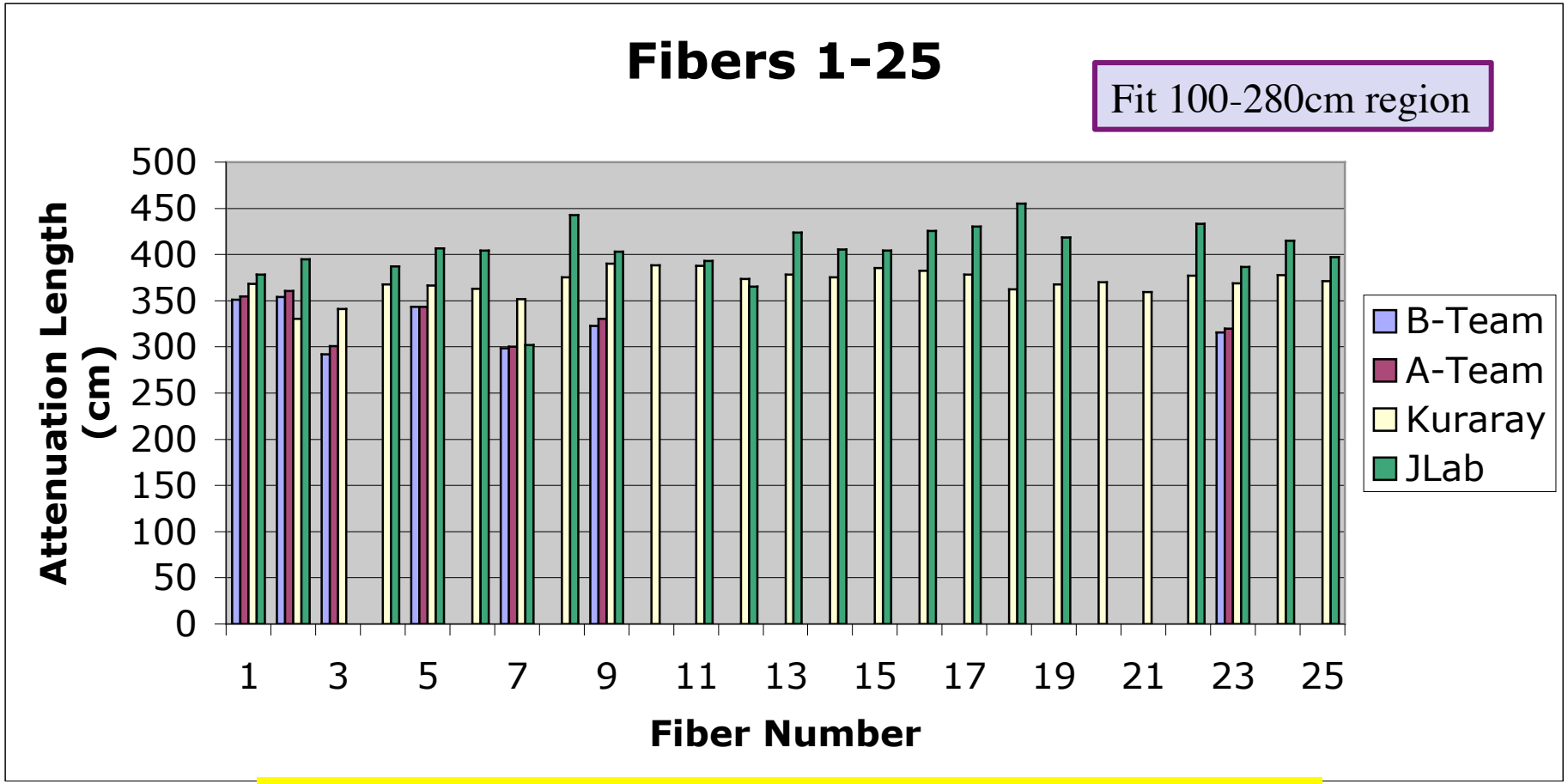
(while HP 3465A was working)

Double Exponential Fit



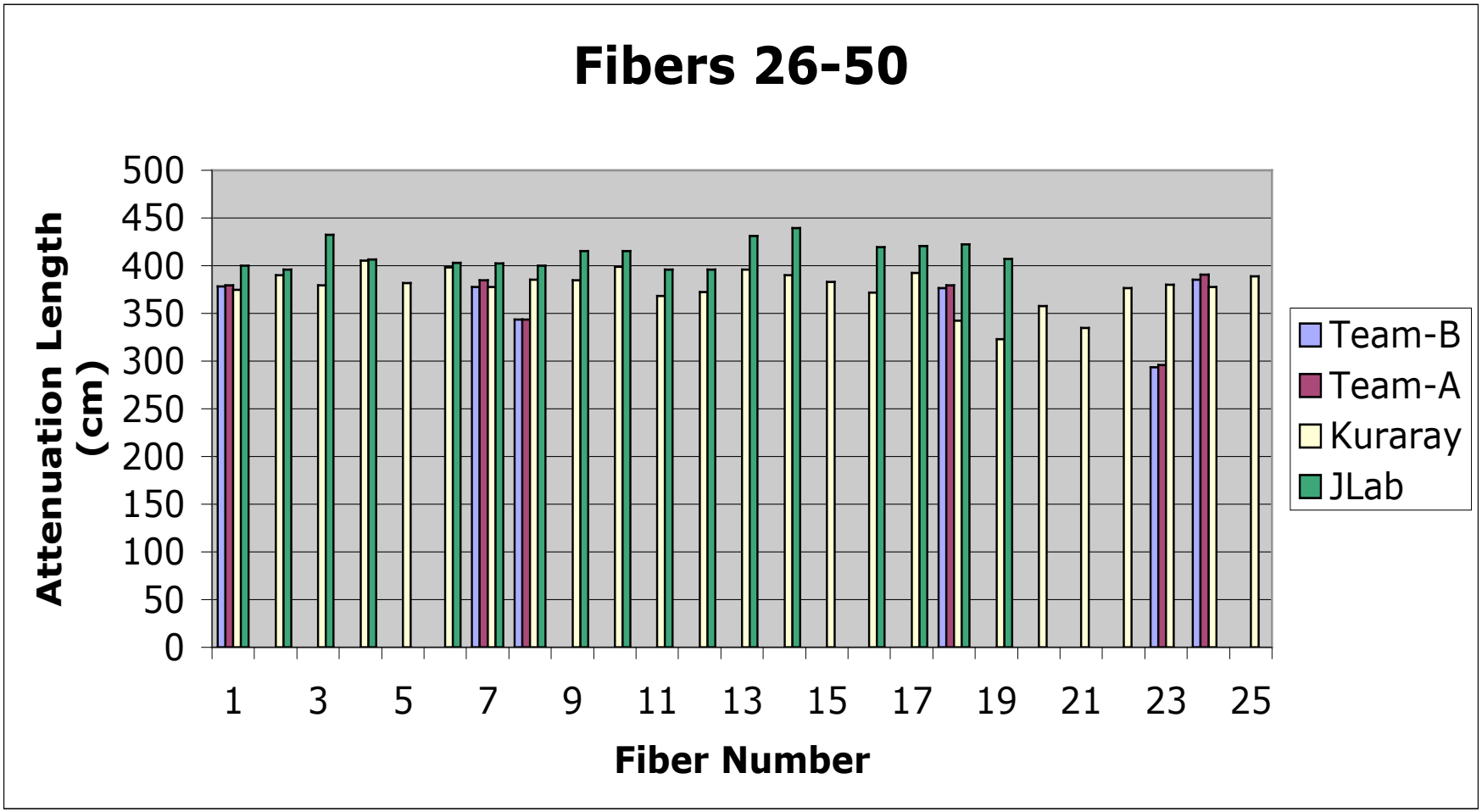


Preliminary Results Compared - I



A-Team and B-Team used same data set but different analysis

Results Compared - II



What next?

- The Team-A, -B Regina results are obtained with photodiode - correct to PMT
- Improve fiber track stability
- Order diffuser for LED
- Order new picoammeter: Keithley 6485
- PHT & BCF-20 measurements in progress
- Spectrophotometer calibration next