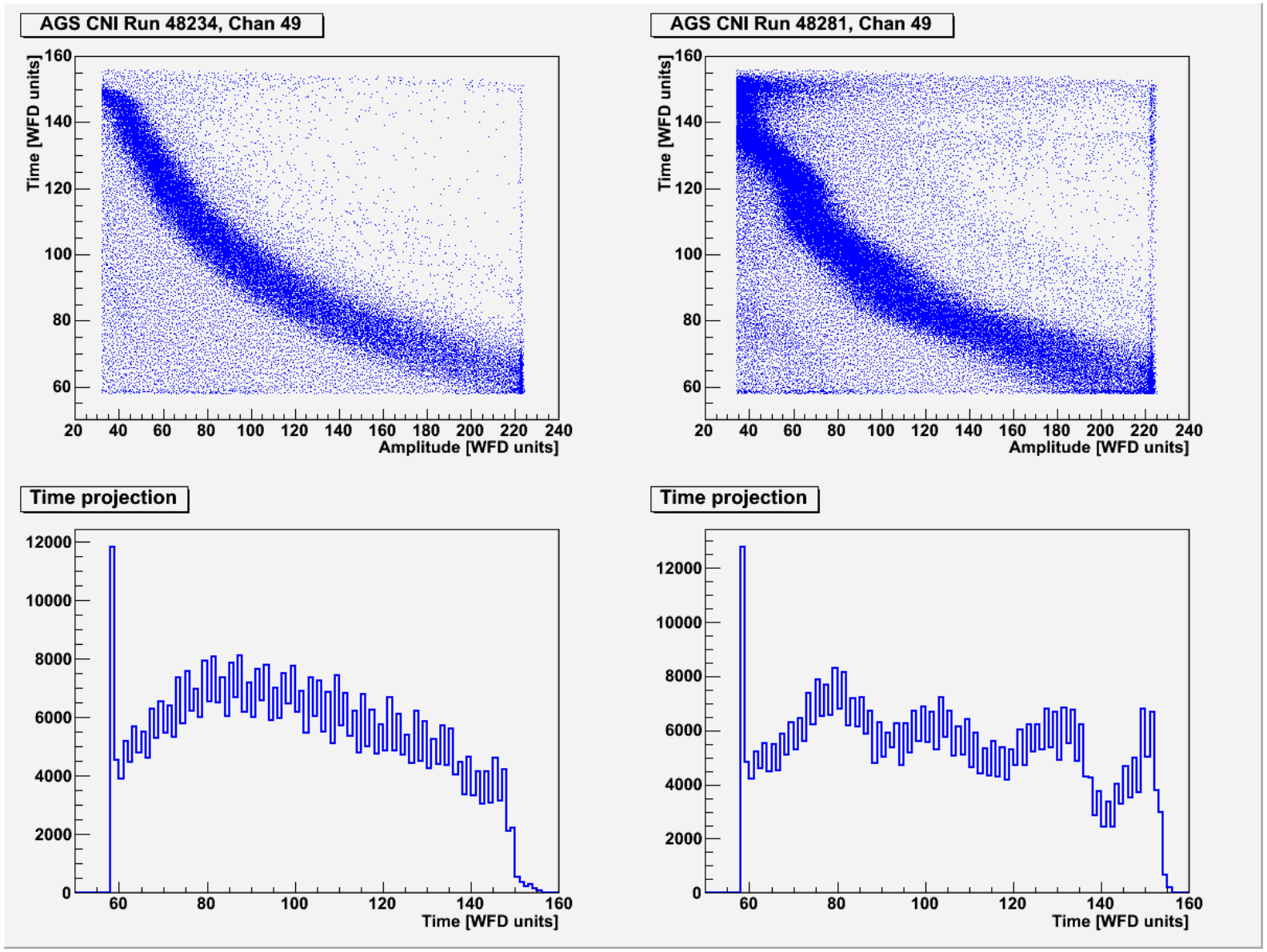
A. Poblaguev

The “Time Scale” problem

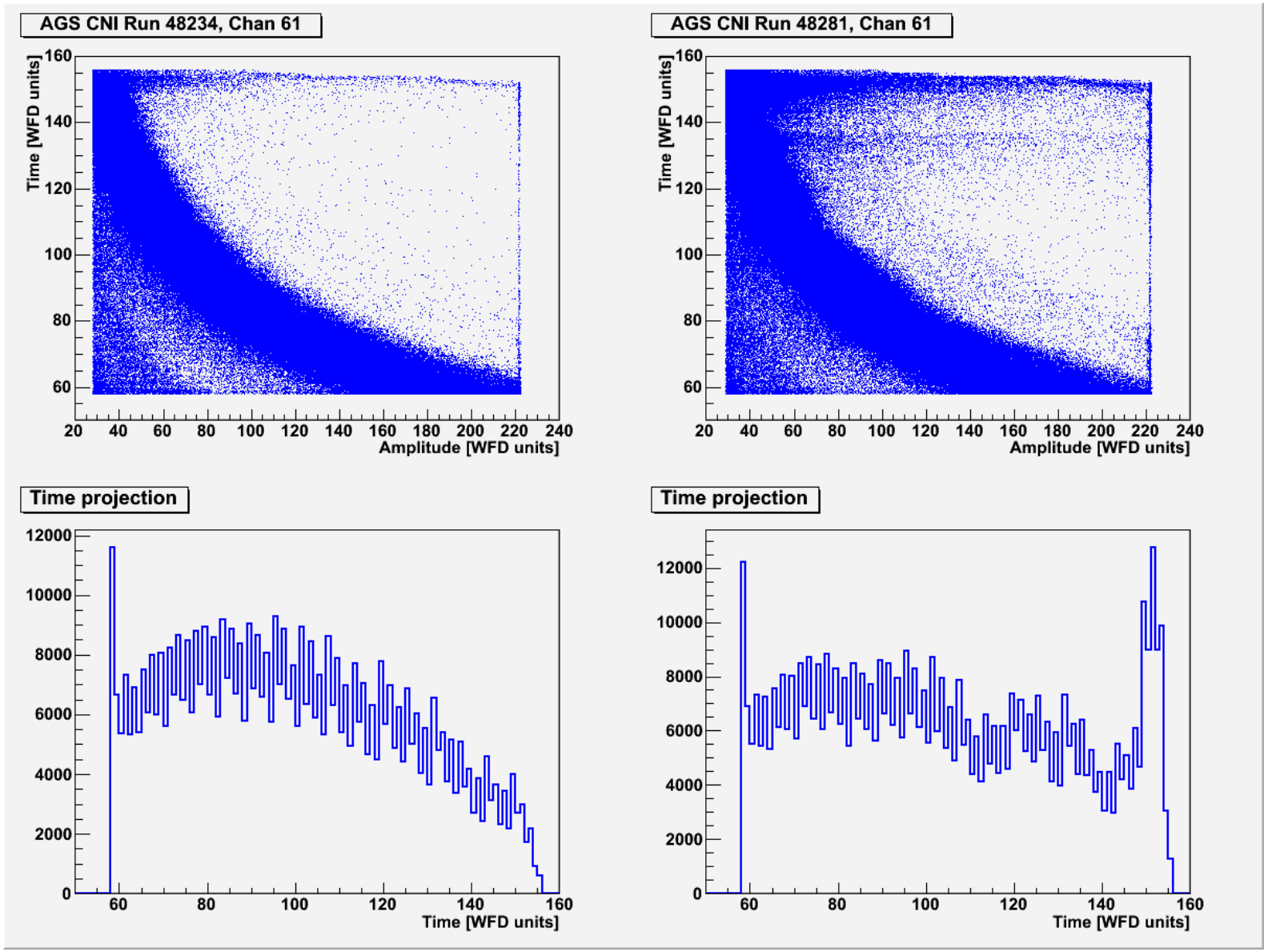
<u>Based on comparison of 2 runs:</u>

- **48234 Low Intensity 0.4×10^{11}**
- **48281 High Intensity 2.0×10^{11}**

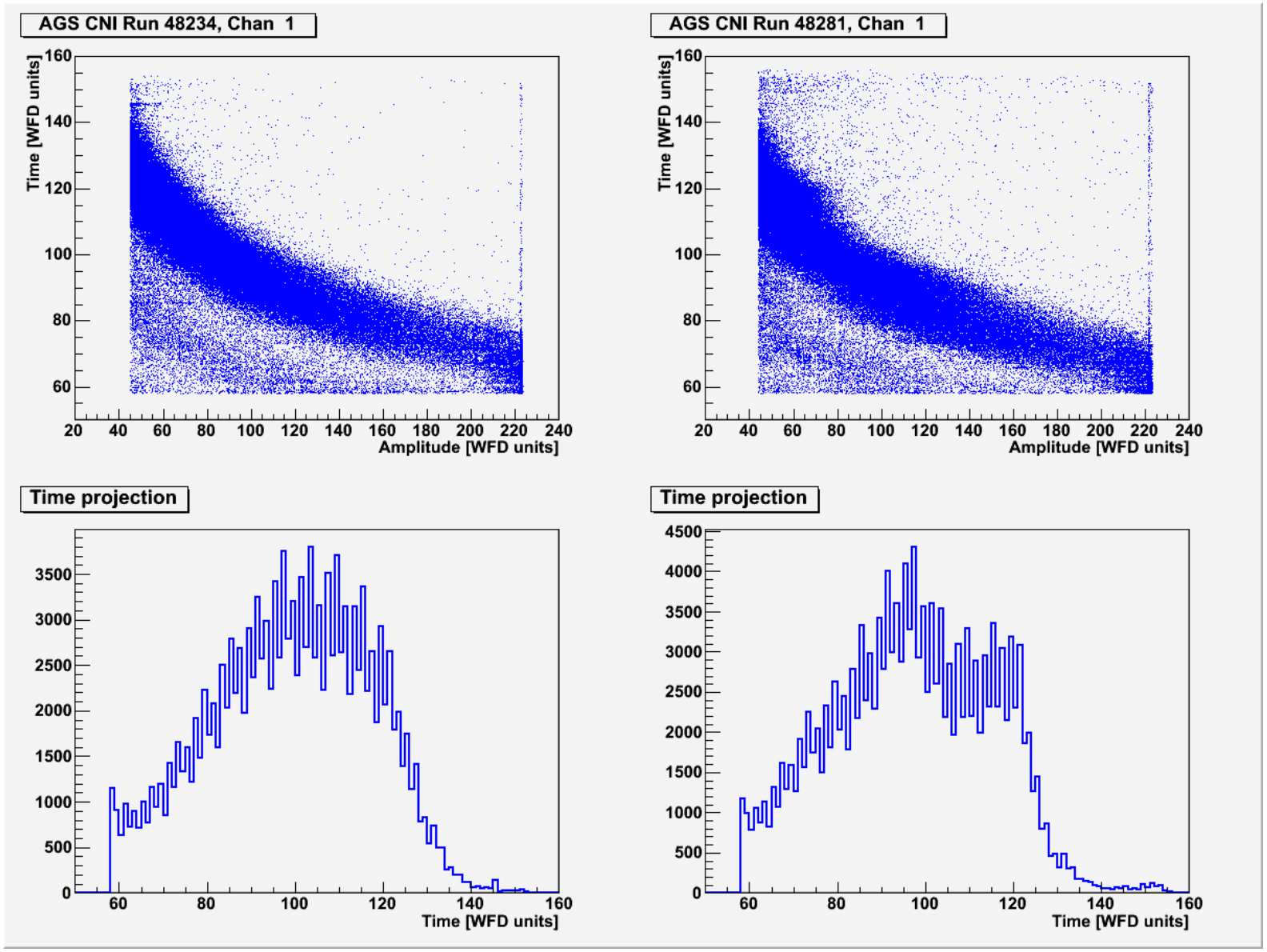
Channel 49 (Hamamatsu, slow)



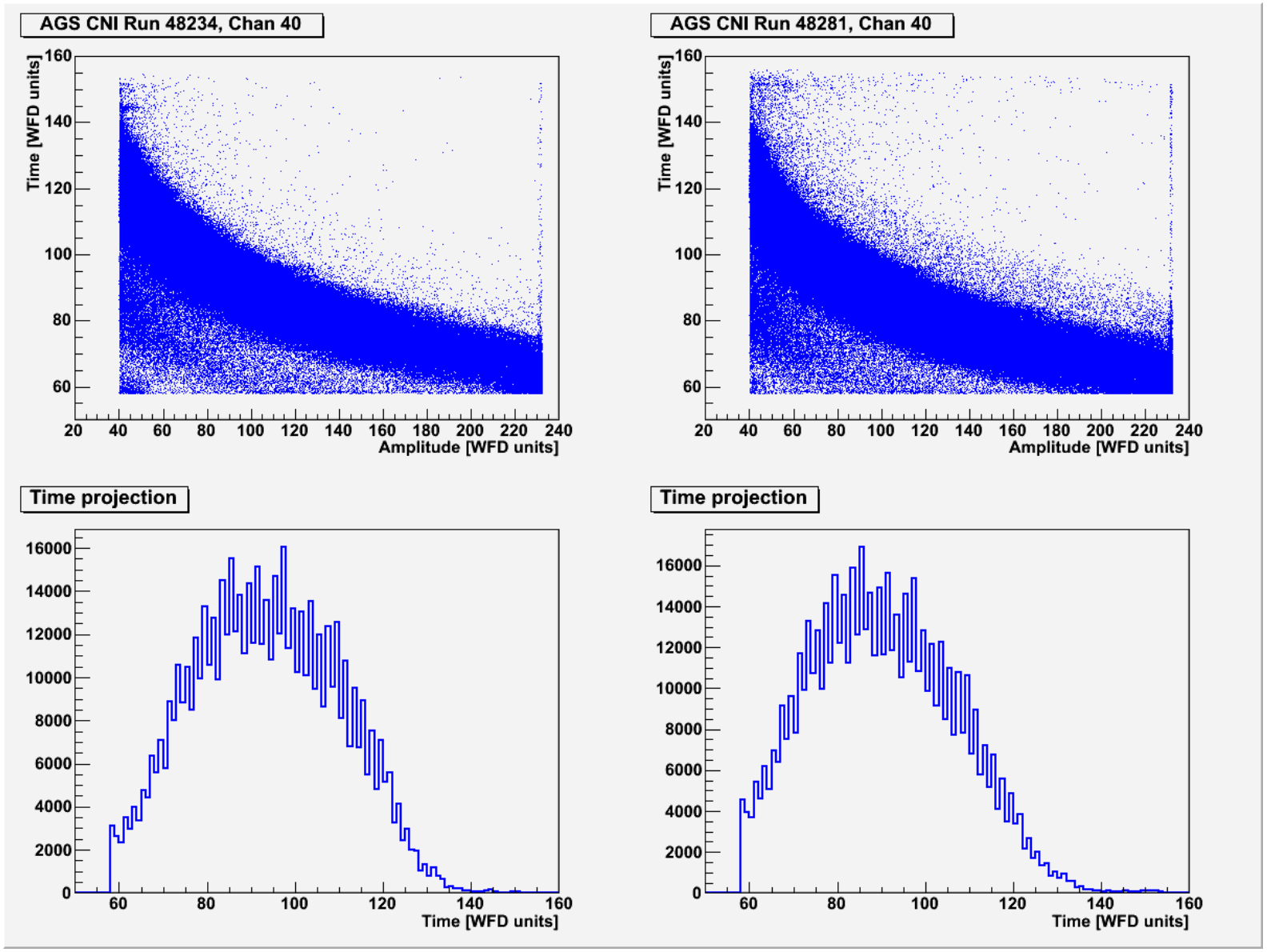
Channel 61 (Hamamatsu, fast)



Channel 1 (BNL, fast)

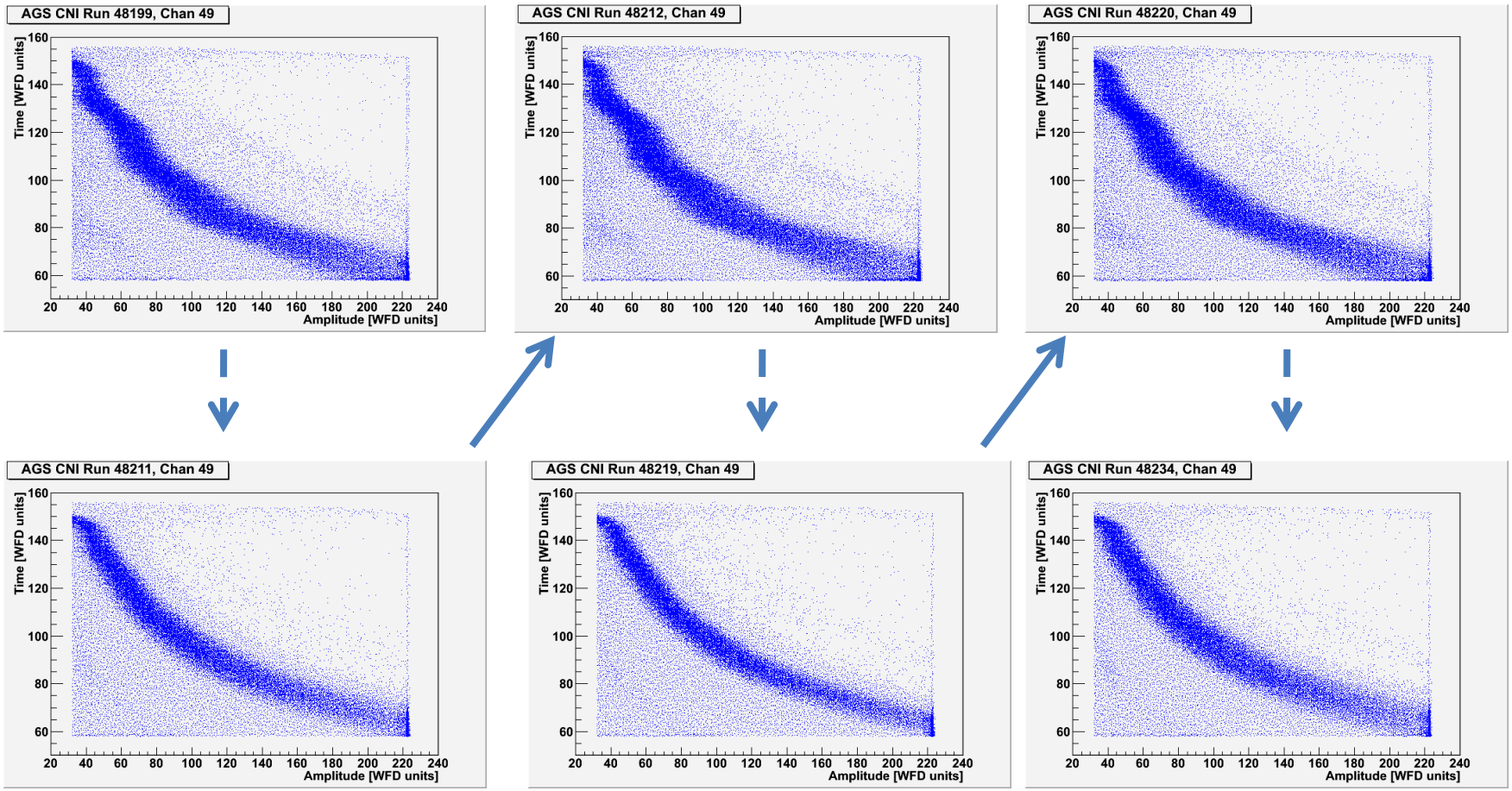


Channel 40 (BNL, fast)



Dependence on intensity

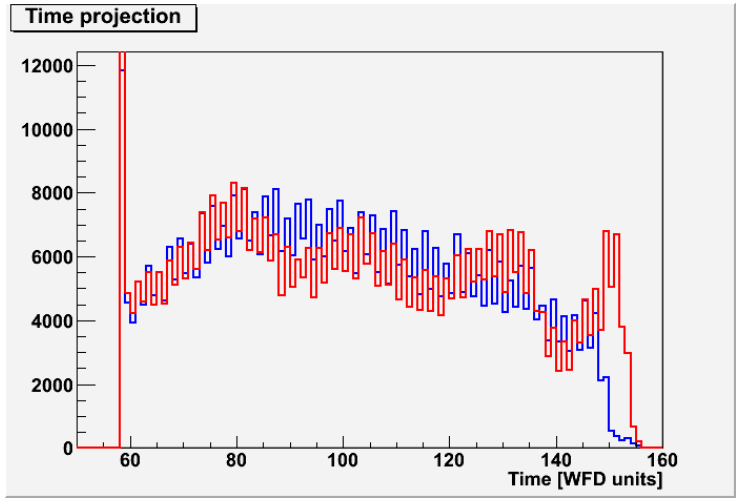
High Intensity (≈ 1.5 × 10^{11})



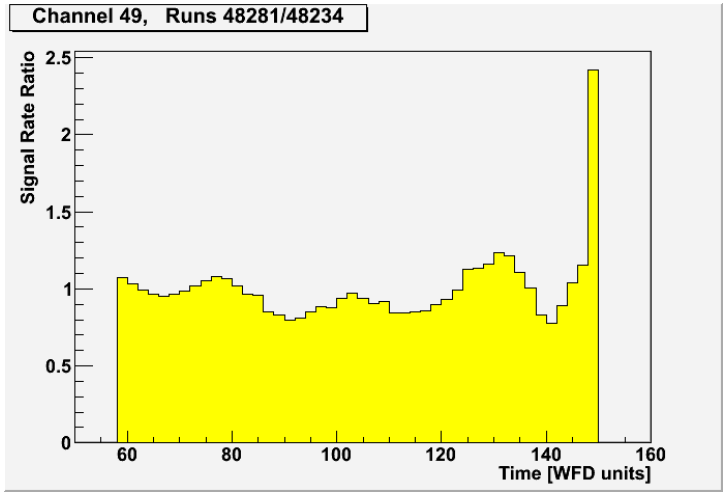
Low Intensity (≈ 0.4 × 10^{11})

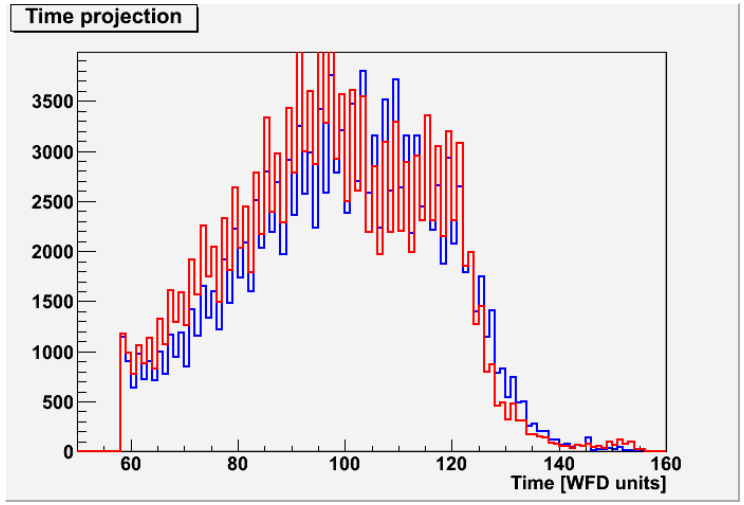
All measurements during one night

Signal Rate Ratio vs Time

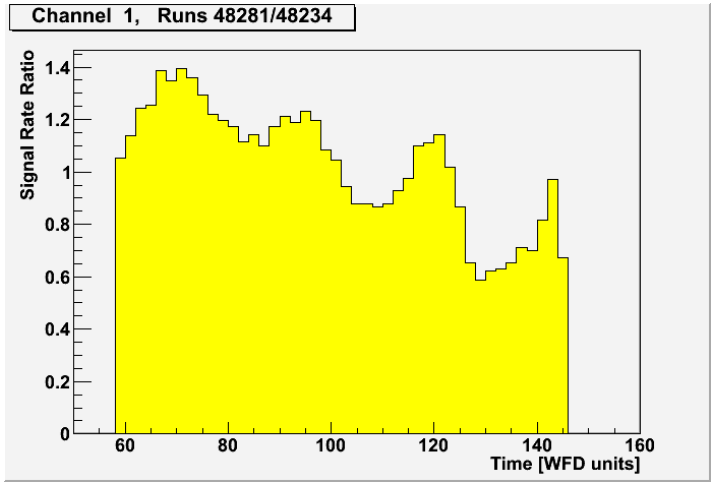


Ch. 49

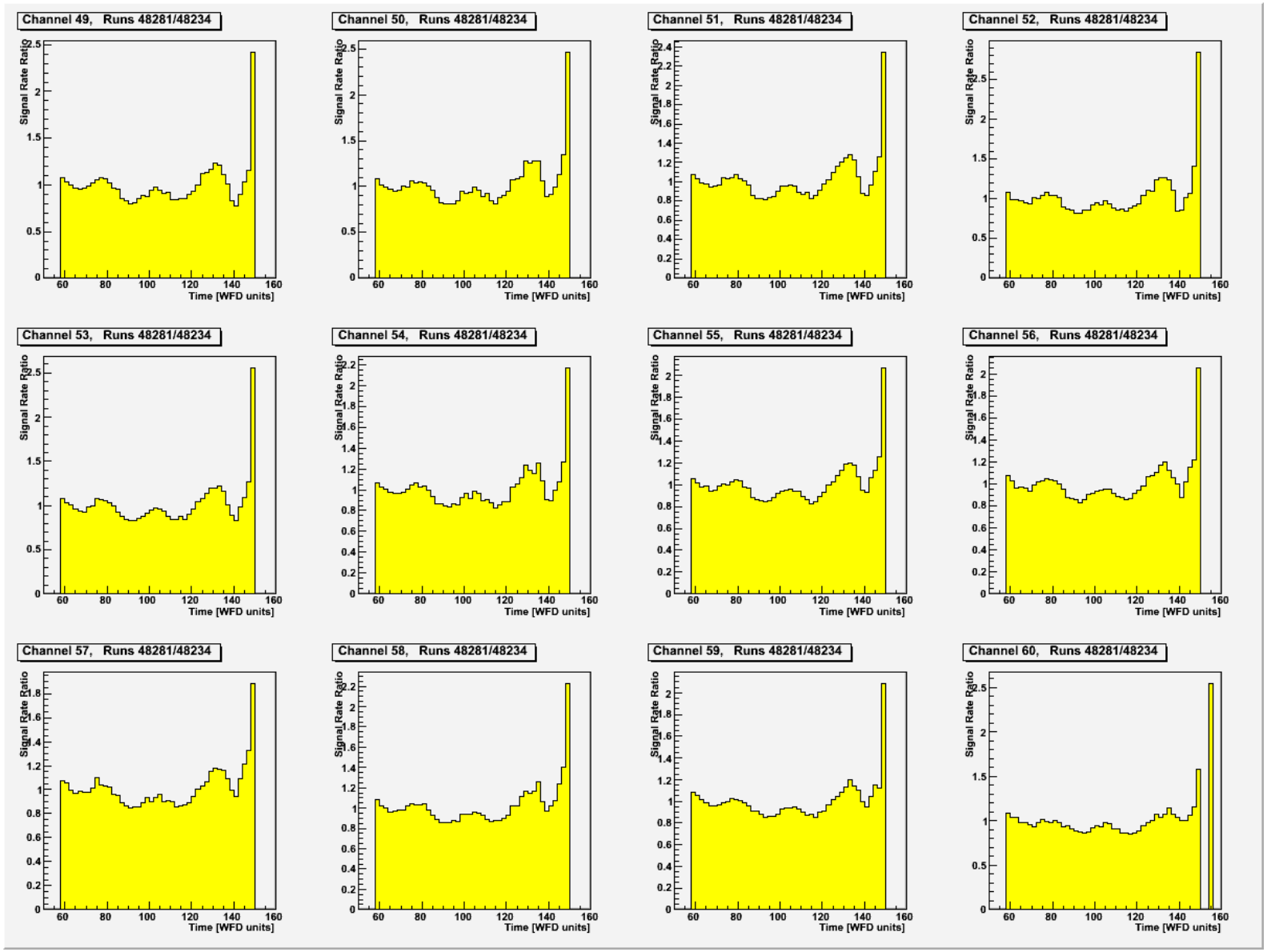




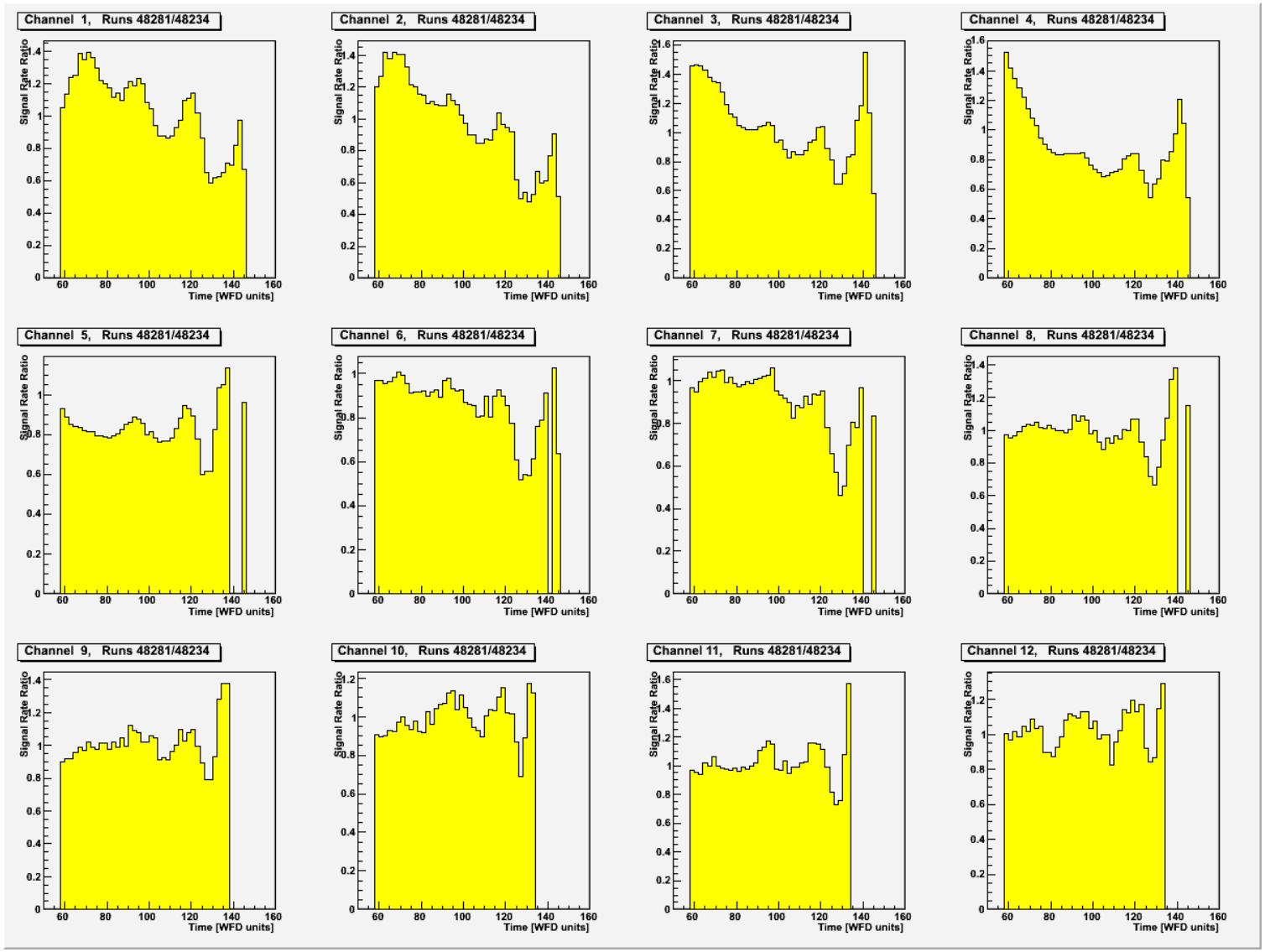
Ch. 1



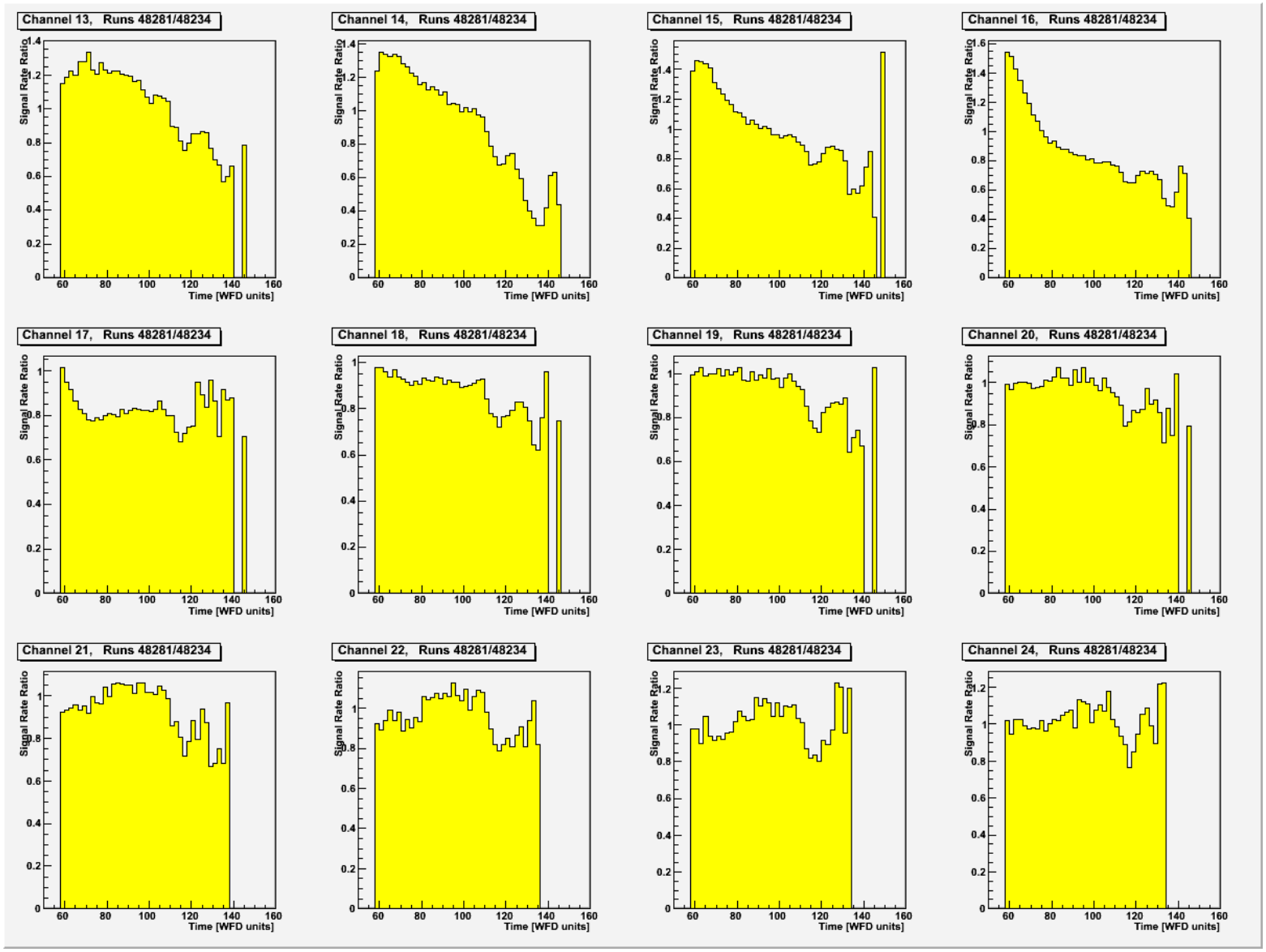
Detector 1, Hamamatsu, slow



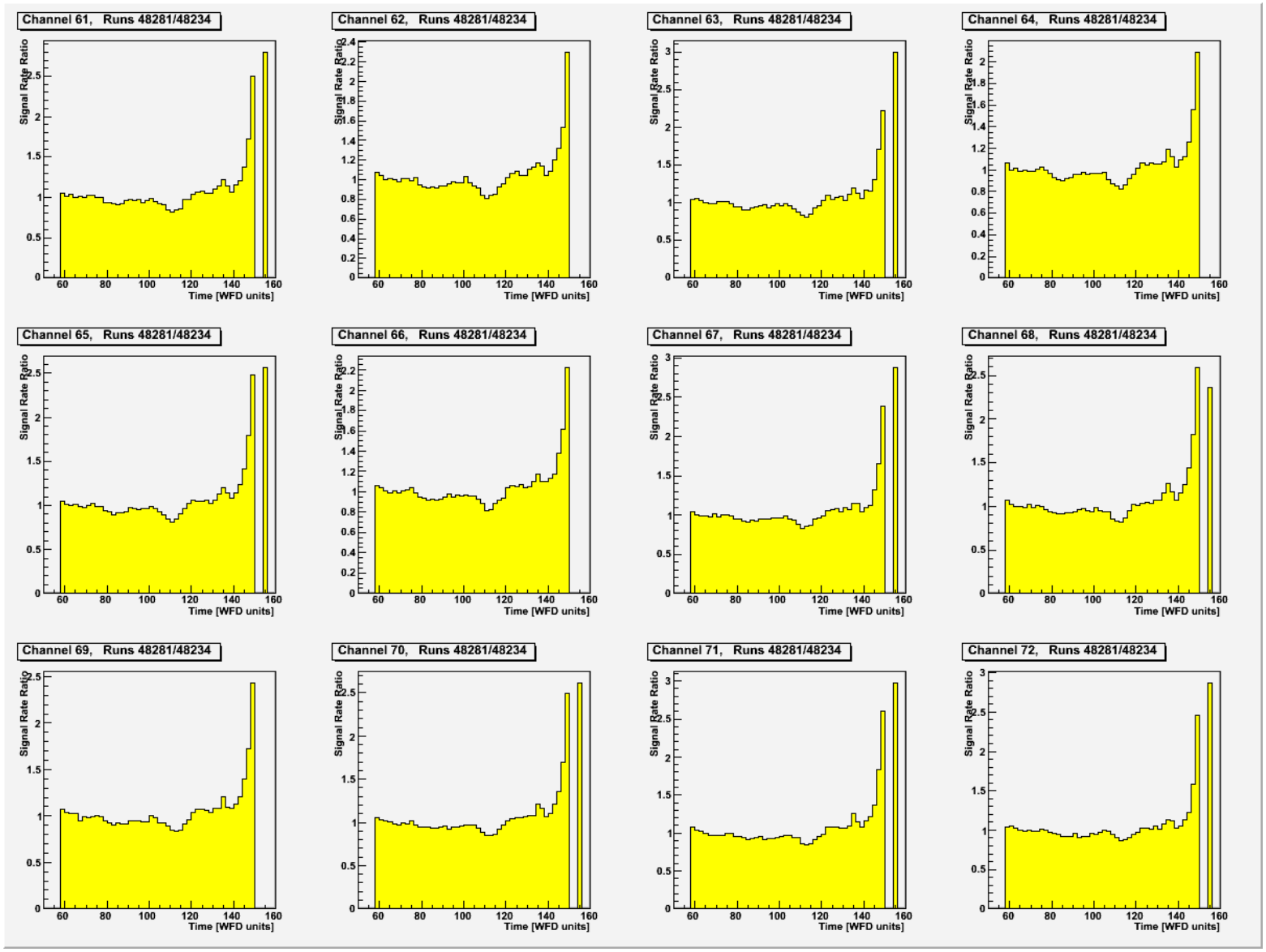
Detector 2, BNL, fast



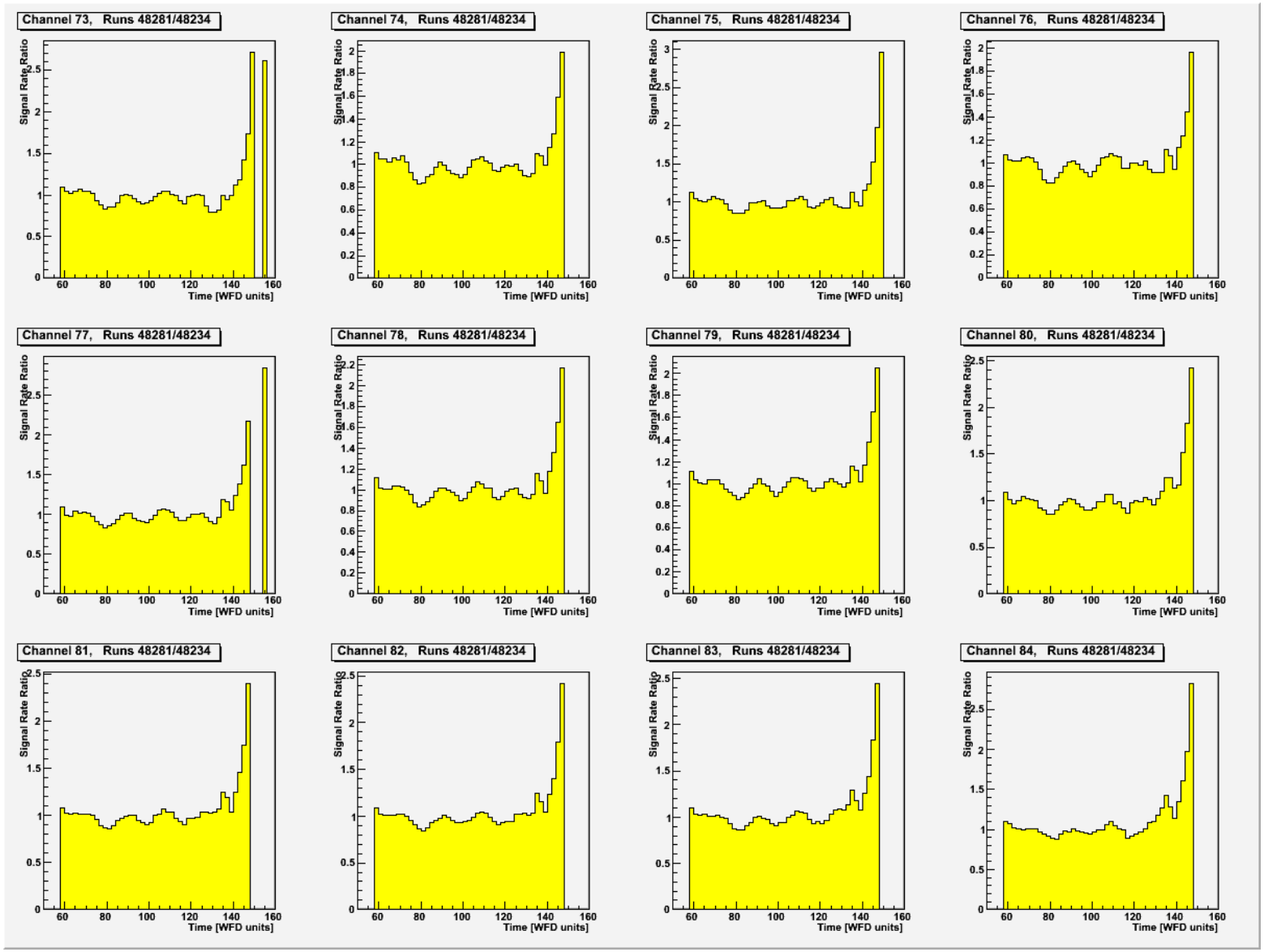
Detector 3, BNL, fast



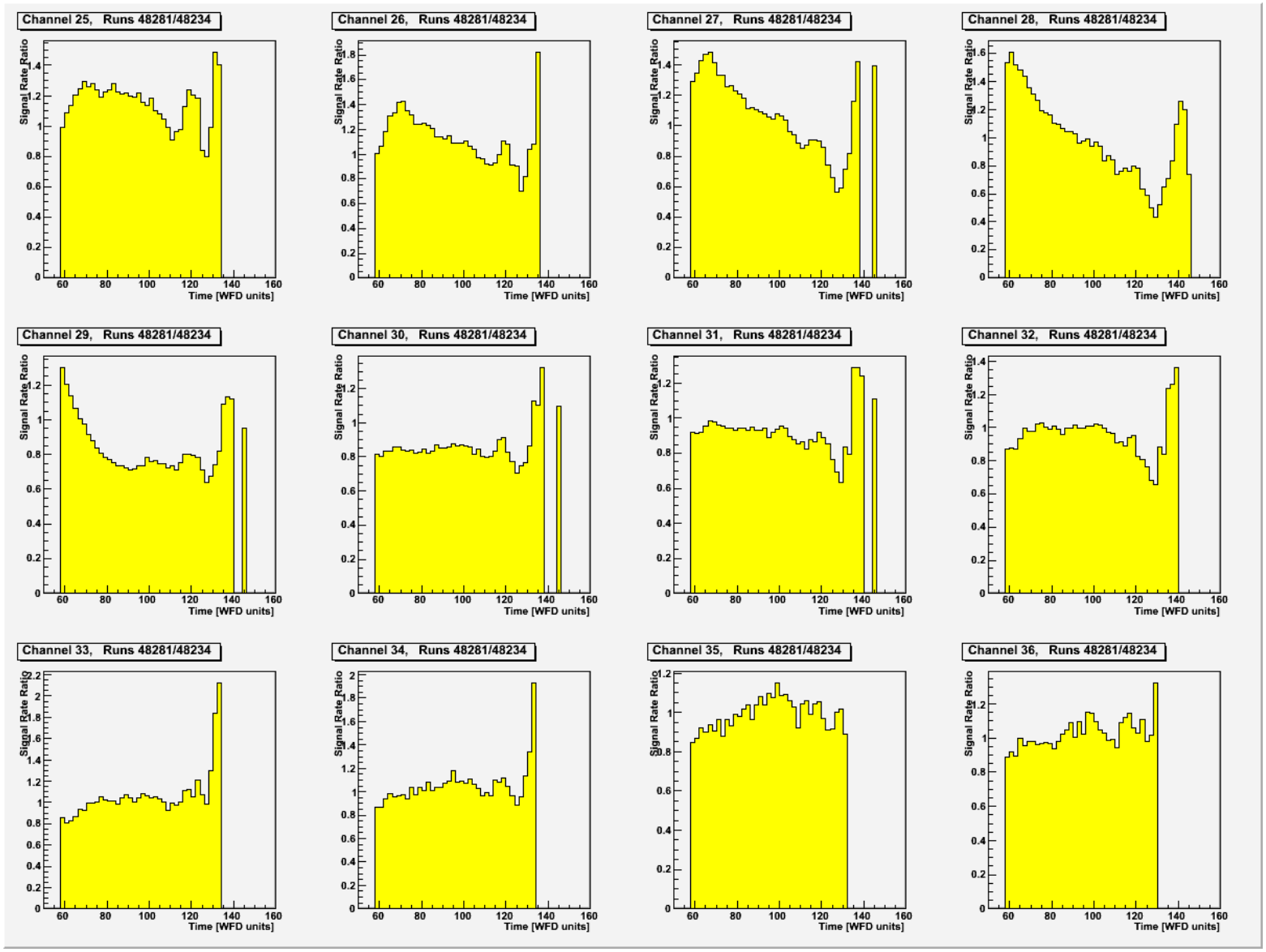
Detector 4, Hamamatsu, fast



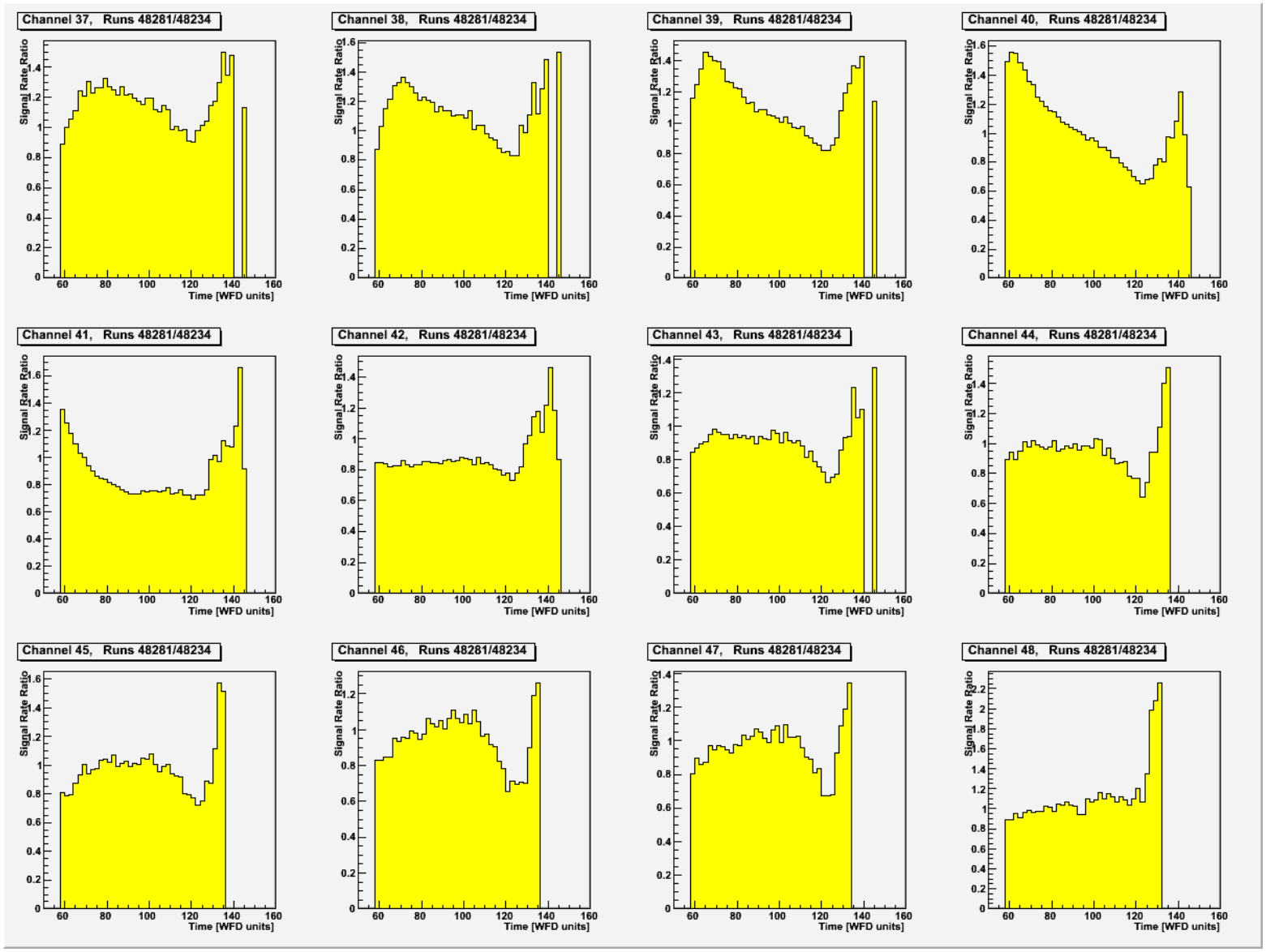
Detector 5, Hamamatsu, fast



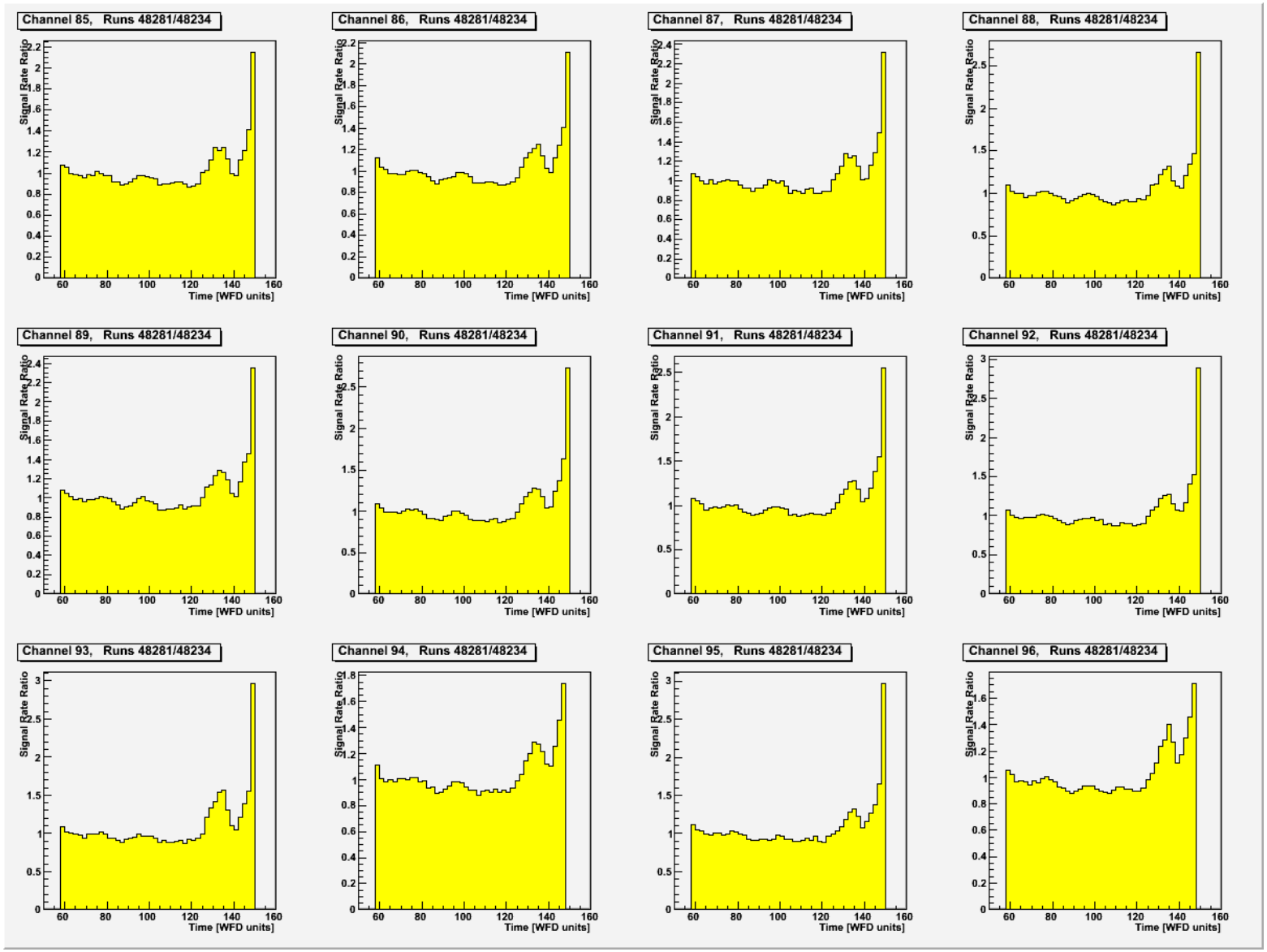
Detector 6, BNL, fast



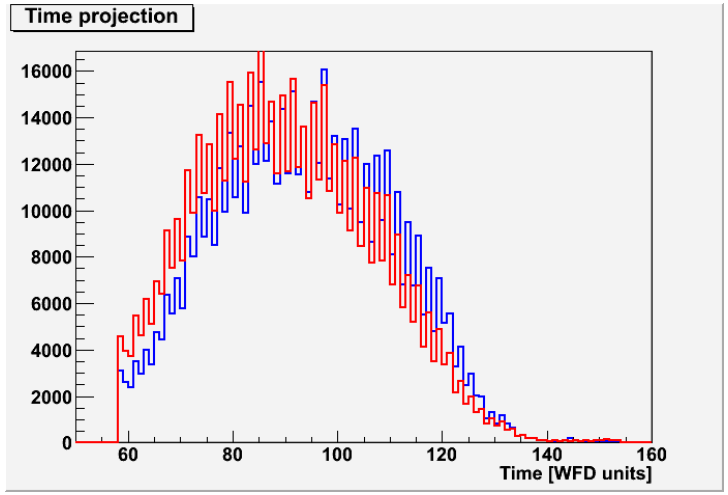
Detector 7, BNL, fast

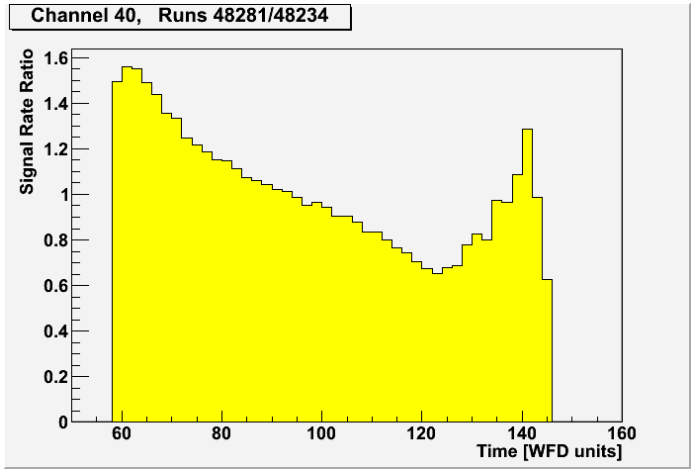


Detector 8, Hamamatsu, slow

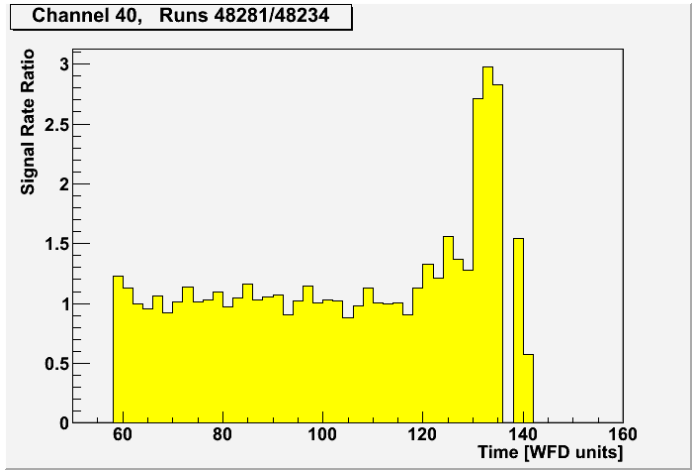


Channel 40. T0 shift ?





Add 4 WFD units (≈5 ns) to the 48281 time.



A simple method to check T0 stability !

"T0 dependence" on intensity is seen in all BNL detectors, but not in Hamamatsu.

Questions.

- ***Do we observe nonlinearity in the time scale?*** Most likely
- ***Does it depend on the intensity?*** Yes!
- ***What is the source ?*** Baseline fluctuations ?
- ***Do we observe "T0 shift" ?*** Most likely, BNL detectors

- ***More accurate analysis is needed***
- ***Are there problems in amplitude measurements?***