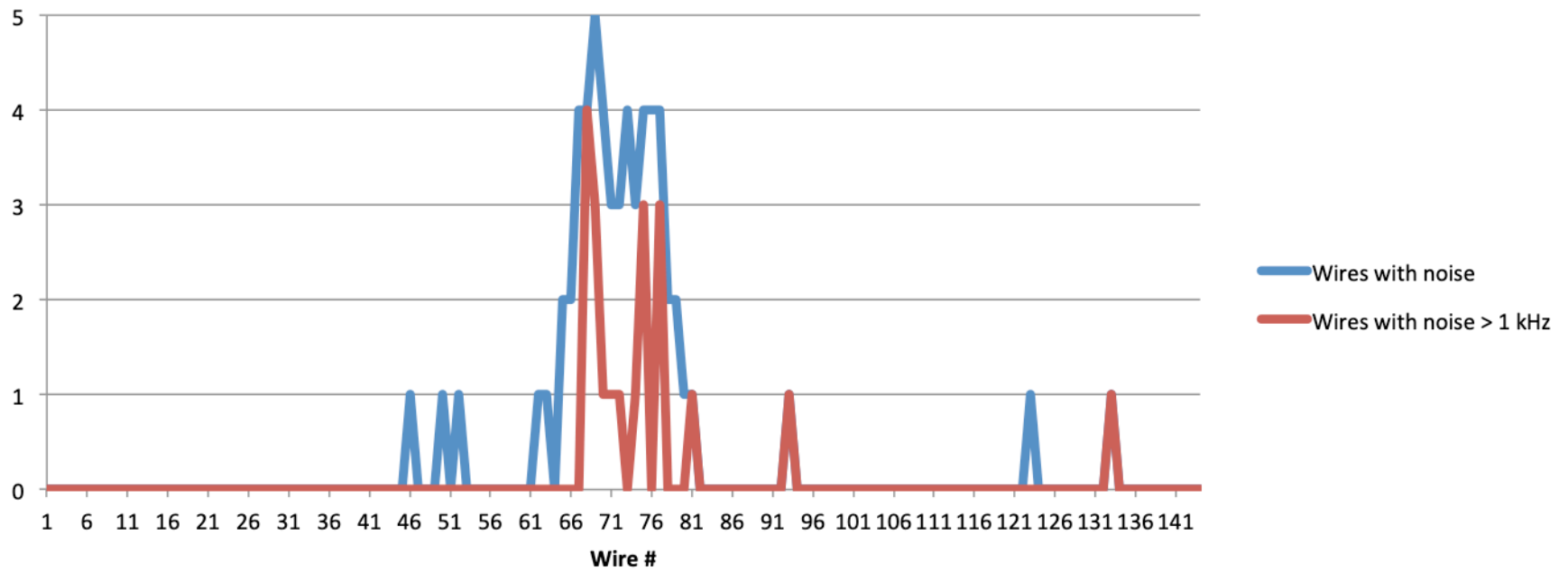
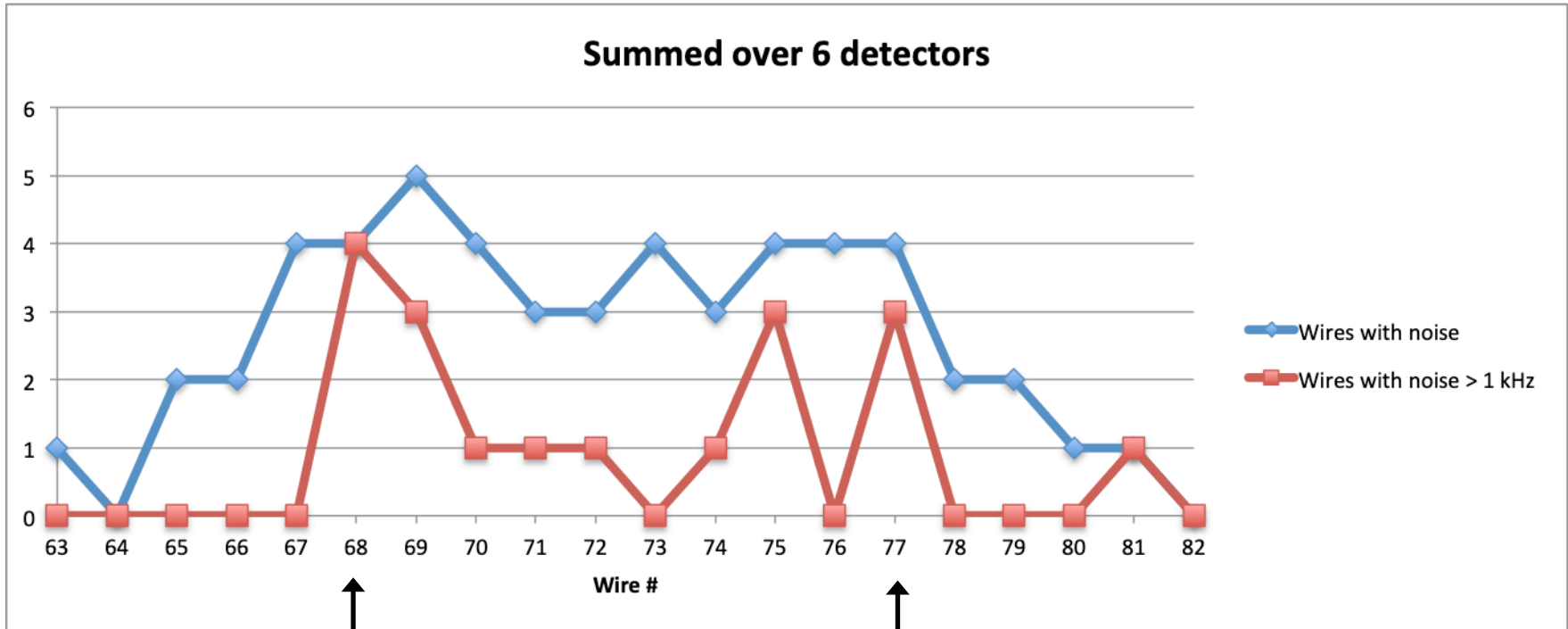


## Results from wire chamber testing

- Assembled and tested 6 detectors
- Will probably start on #7 today
- Tested with 90:10 mixture by volume of Argon:CO<sub>2</sub> at +1800 V, corresponding to an approximate gain of 10<sup>5</sup>

### Summed over 6 detectors

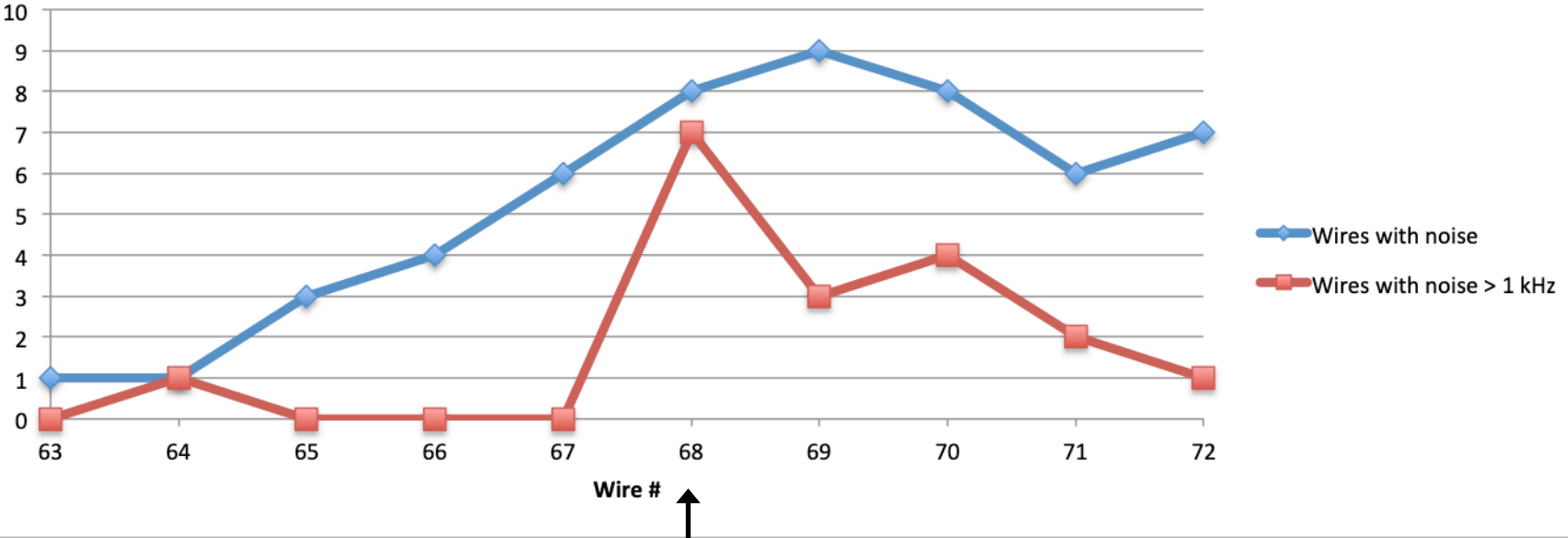




First carbon  
tube

Last carbon  
tube

Summed over 6 detectors left + right



Wire #

First carbon tube

## **Wire chamber parameters**

Sense wire diameter:  $20\ \mu\text{m}$

Field wire diameter:  $76\ \mu\text{m}$

Sense wire spacing:  $0.4\ \text{inch} = 1\ \text{cm}$

Wire plane to cathode plane gap:  $0.4\ \text{inch} = 1\ \text{cm}$

Sense wire capacitance for infinite wire array =  $7.6\ \text{pF}$

Carbon tube diameter:  $28\ \text{mil} = 711\ \mu\text{m}$

Carbon tube capacitance for infinite wire array =  $15\ \text{pF}$

## Conclusions so far:

- Something is going on in the central part of the detectors
- There's a big jump in capacitance from the sense wires to the carbon tubes. Need to calculate capacitances for sense wires near to carbon tubes (Garfield)
- Are we over-biasing the sense wires adjacent to carbon tubes?
- The gas mixture we're using, 90:10 Argon:CO<sub>2</sub> is a very lean gas mixture, it's poor on quencher. The chambers may be operating near the edge of stability.
- 90:10 was never tested in the UMass lab with the big prototype detector that's currently at Jlab.
- Should investigate a 85:15 gas mixture
- Our gas system is unstable. Should be using premixed gas.