

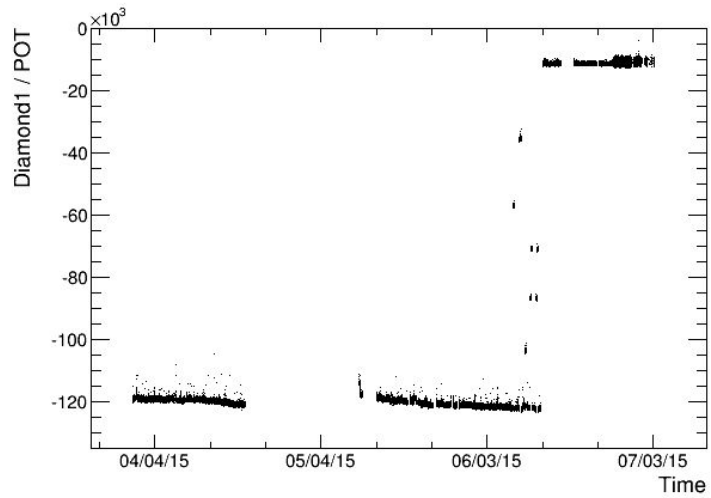
# DUNE Diamond Update

Kerrie Dochen

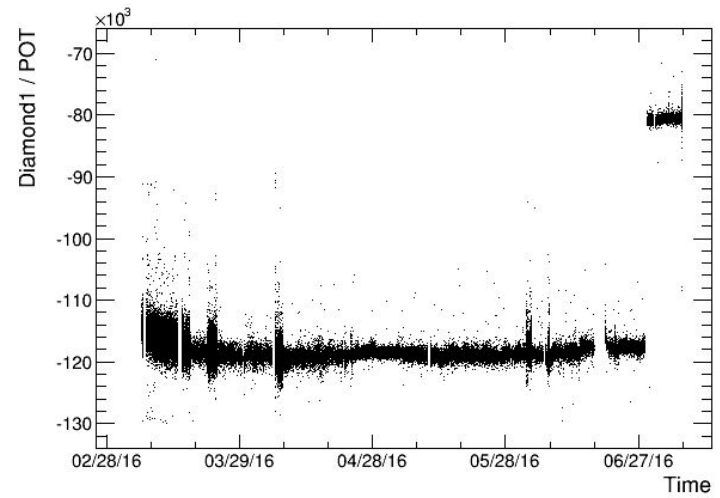
University of Colorado Boulder

7-20-2016

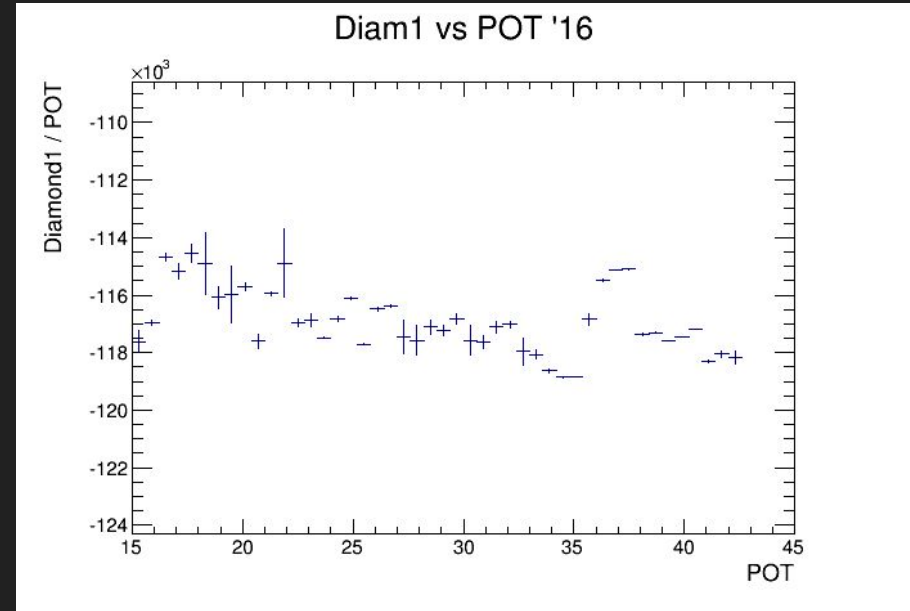
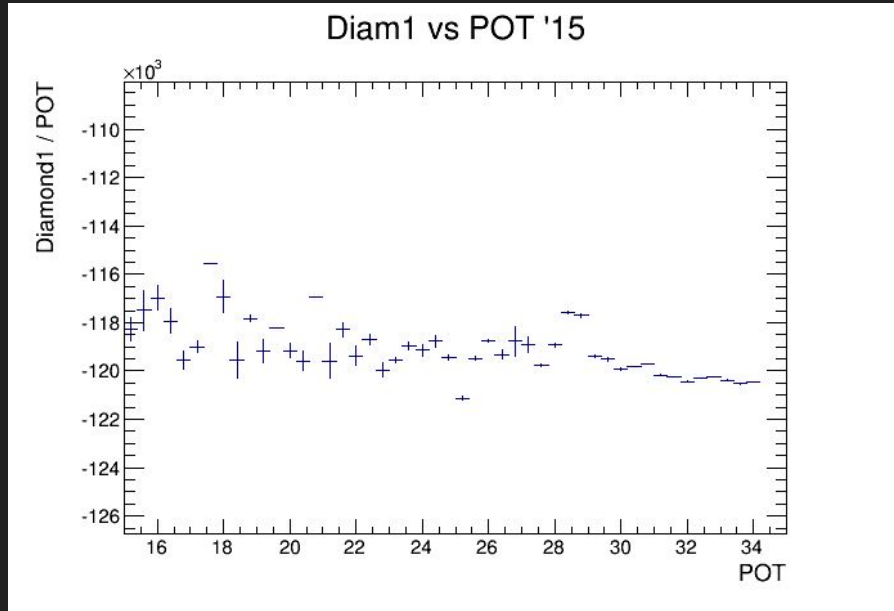
2015



2016

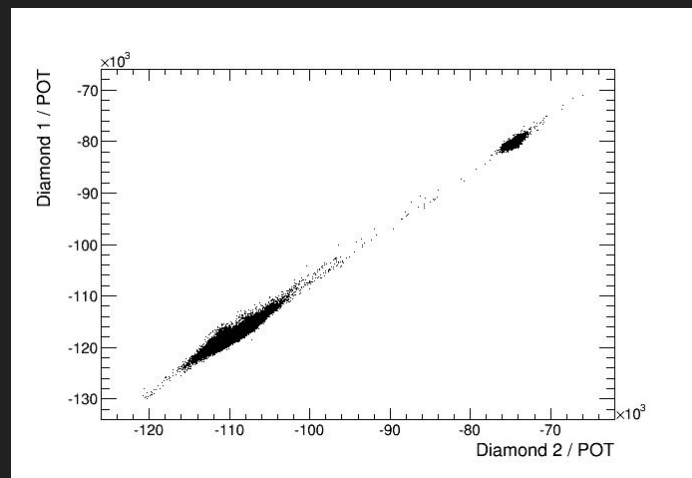
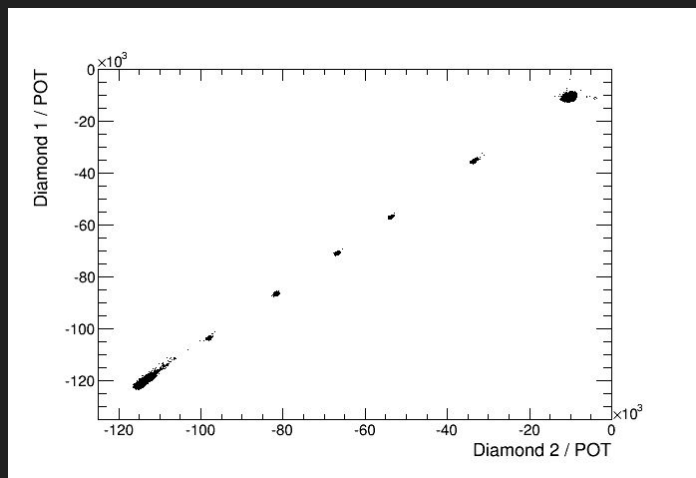
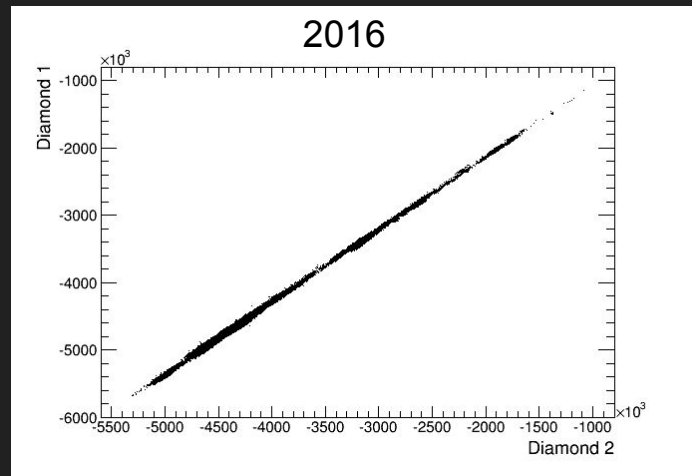
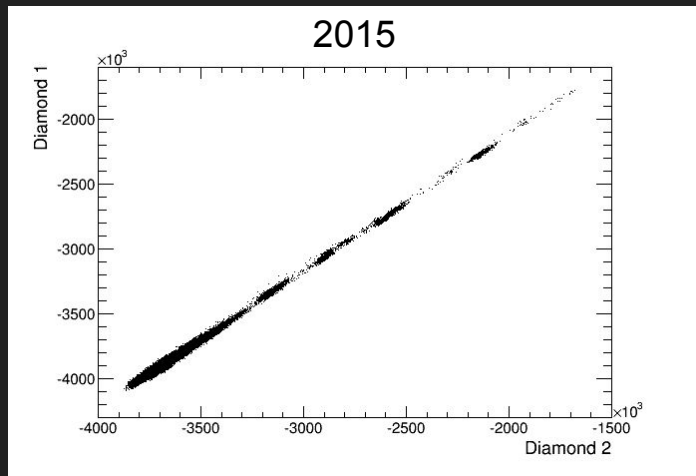


# Diamond Linearity



Diamonds appear linear with PoT both years, with about 4-5% variation in signal

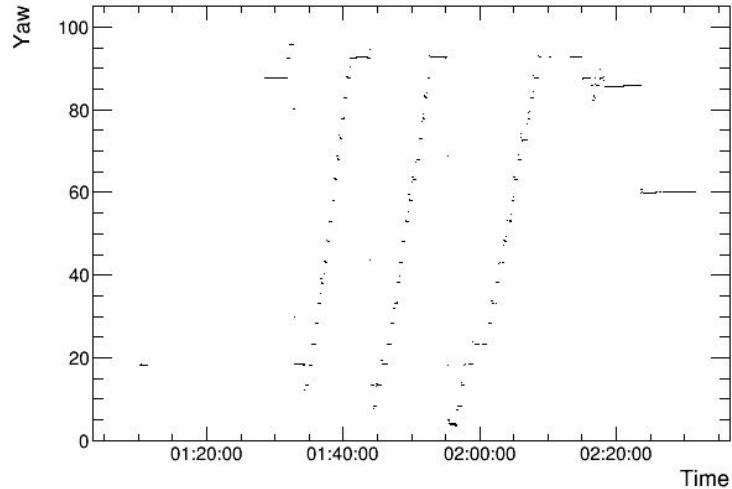
# Comparing the diamonds to each other



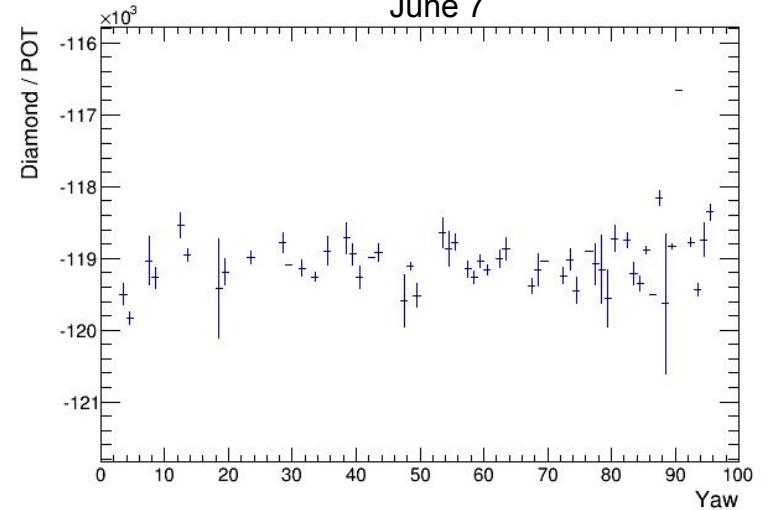
Normalized by PoT

# Effect of moving Gas Cherenkov Detector

Yaw Scan June 7

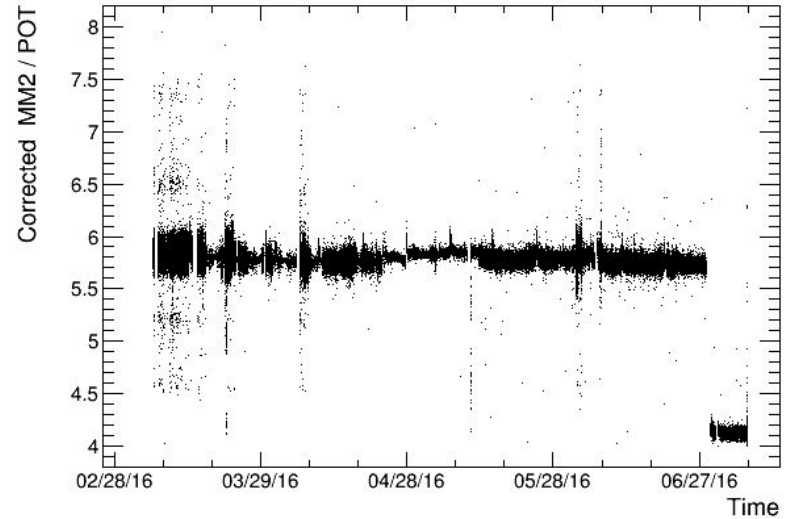
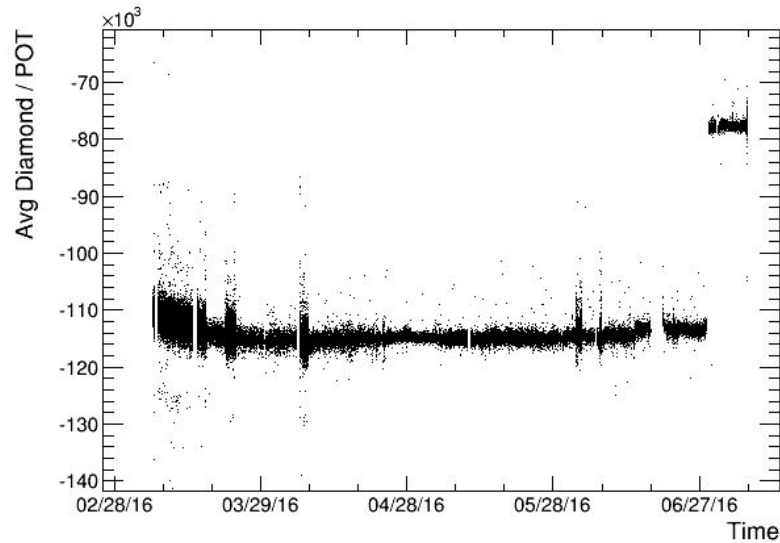


Diamond 1 vs Yaw  
June 7

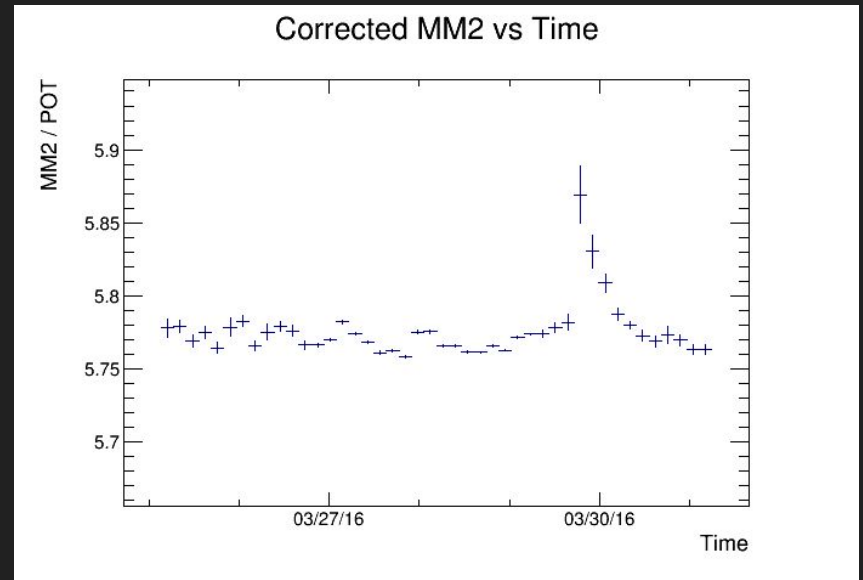
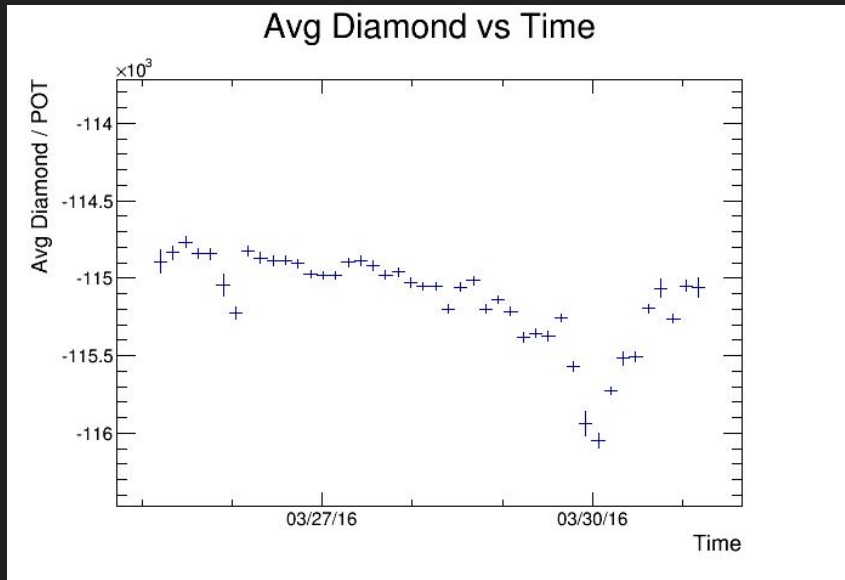


Diamonds do not see a significant effect from changing the yaw  
Pitch was held constant 32.5 % extension

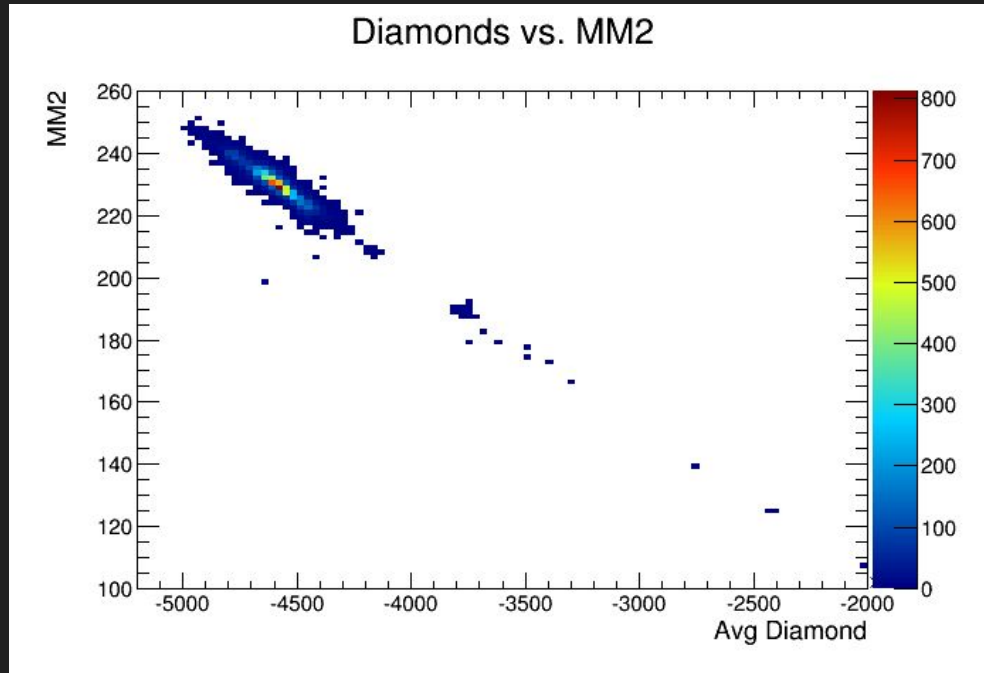
# Comparing diamonds to muon monitor 2



# Comparing diamonds to muon monitor 2



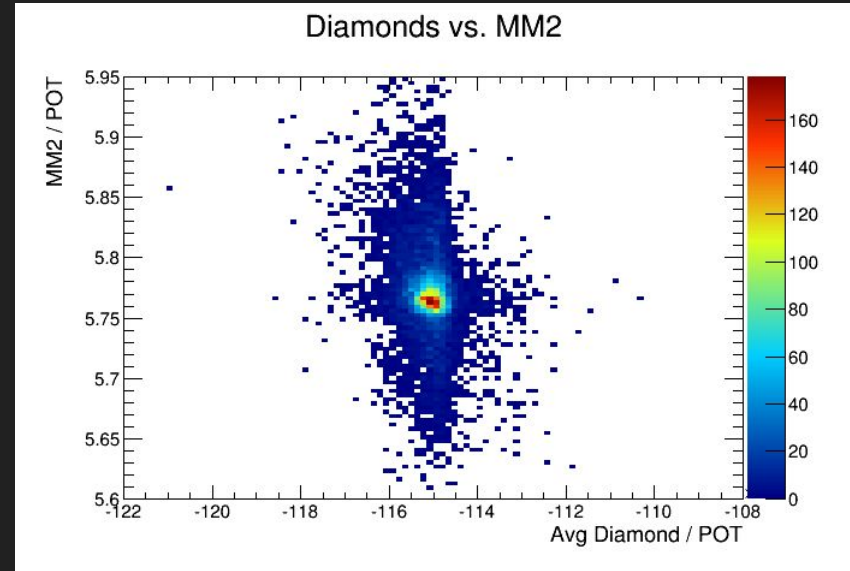
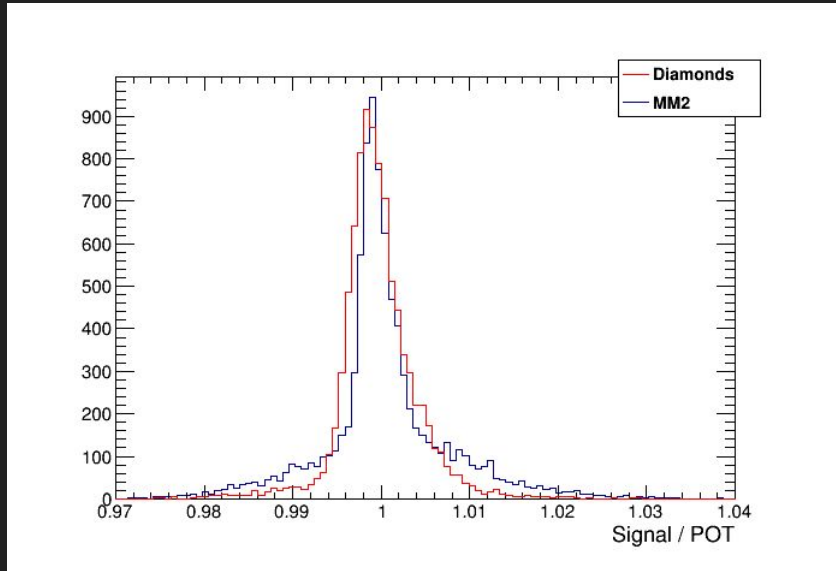
# Comparing diamonds to muon monitor 2



Muon monitor 2 and the averaged diamond signal are again highly correlated as expected. They are both measuring results of PoT.



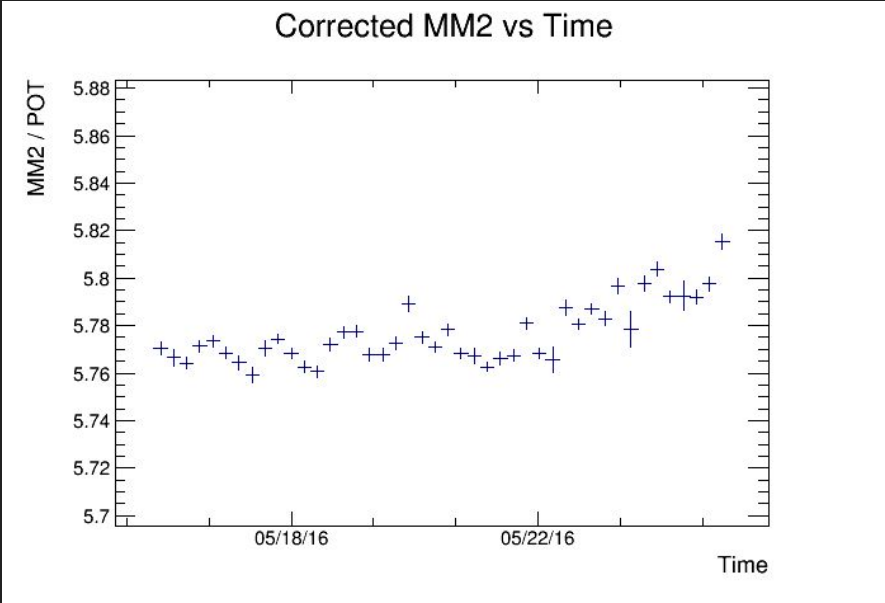
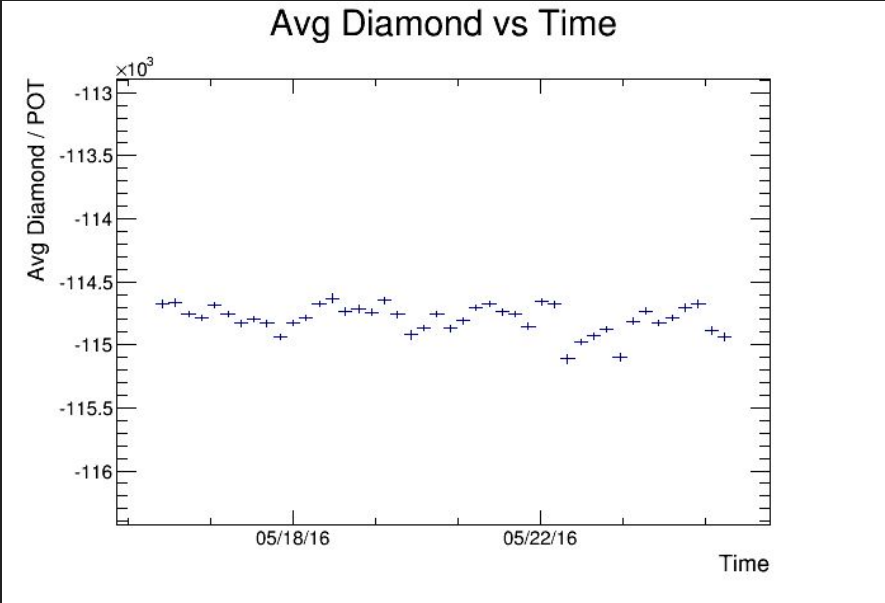
# Comparing diamonds to muon monitor 2



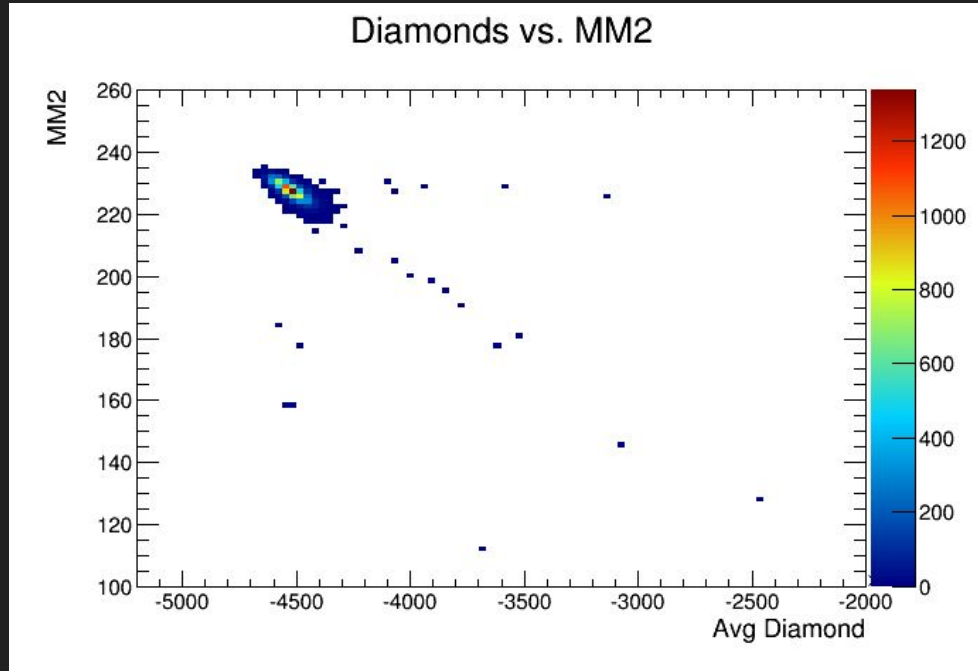
- Average diamond signal and muon monitor signal normalized by POT
- Divided by mean signal

- Correlation coefficient: -0.245

# Comparing diamonds to muon monitor 2

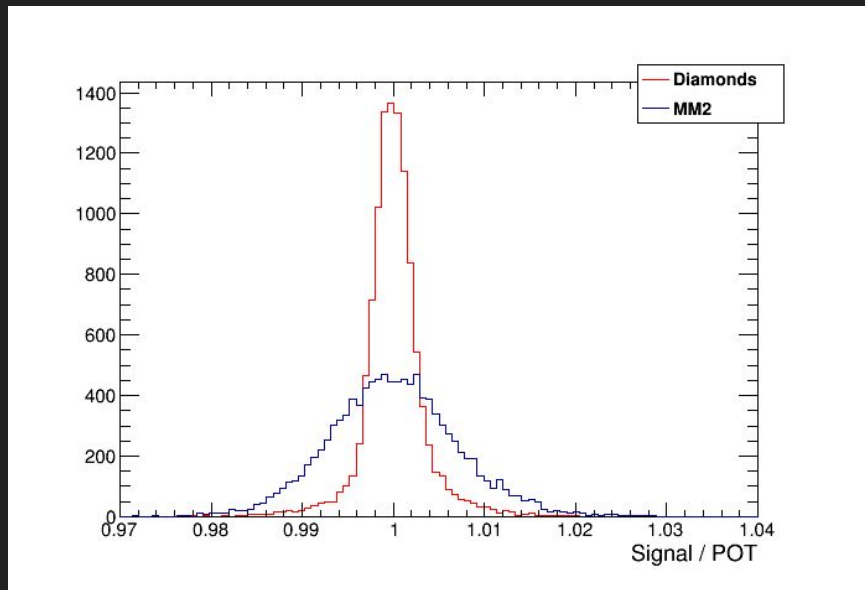


# Comparing diamonds to muon monitor 2

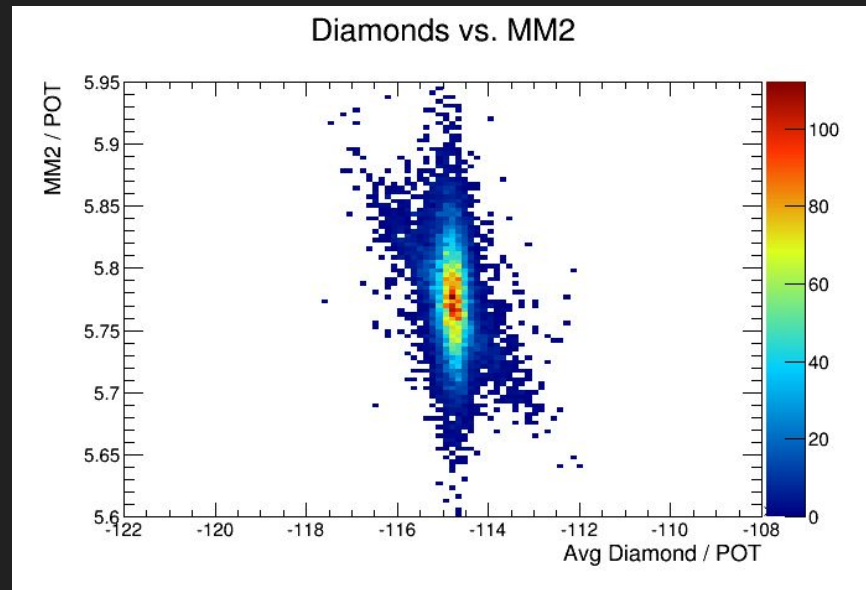


Muon monitor 2 and the averaged diamond signal are again highly correlated as expected. They are both measuring results of PoT.

# Comparing diamonds to muon monitor 2



- Average diamond signal and muon monitor signal normalized by POT
- Divided by mean signal



- Correlation coefficient: -0.355

# Future Plans

- Run simulation in neutrino and anti-neutrino mode and compare to data
- Beginning to work on prototype diamond hardware