Frequency-Resolved Optical-Gating

FROG

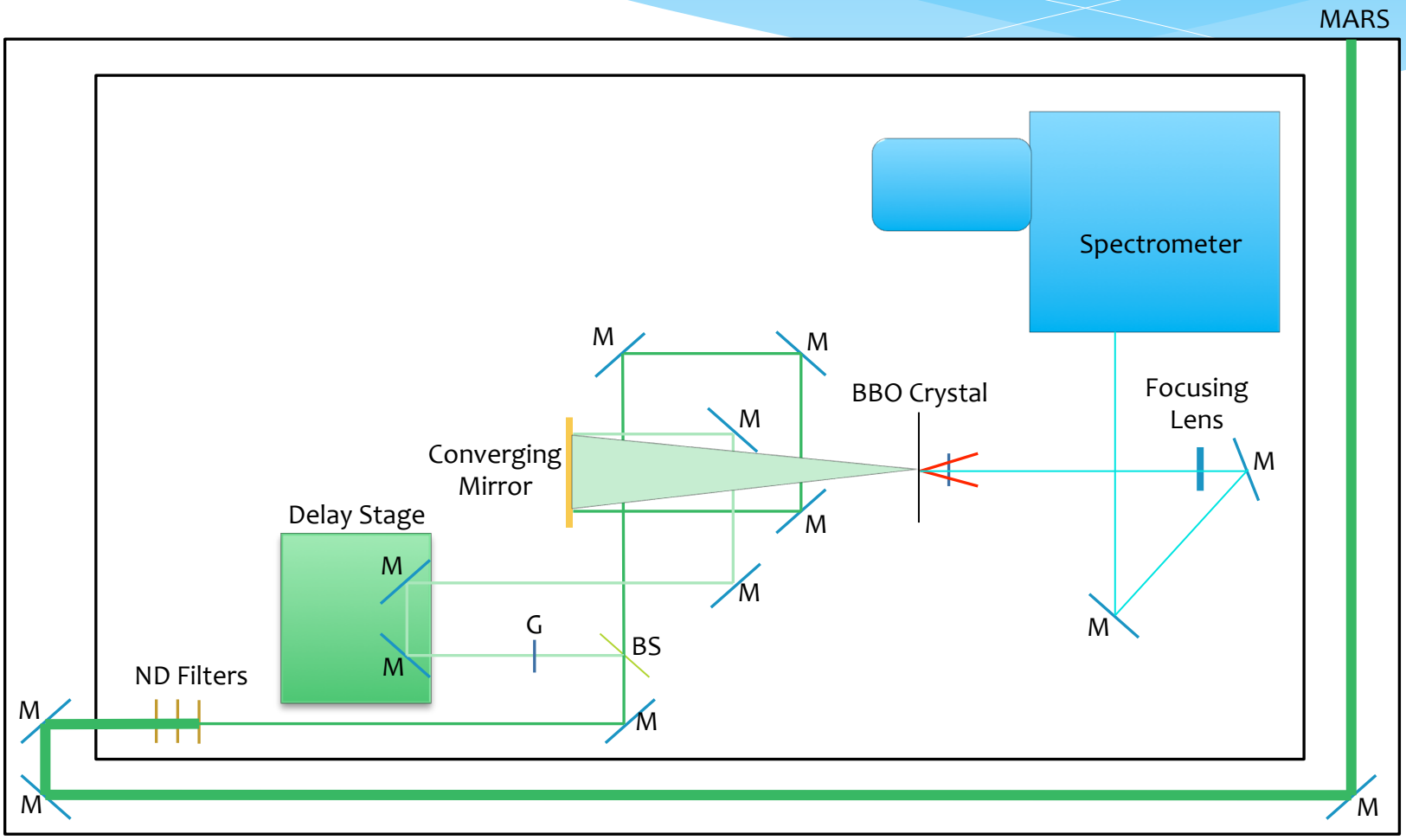
Goals

* Align the FROG
* Recording Pulse Characteristics
* Optimizing Program
* Expanding to other Wavelengths

What have I been doing?

* Relearning MatLab
* Reading about Ultrafast Optics
* Learning LabView
* Playing with the FROG
* Aligning, aligning, and more aligning
* Running scans of pulses with the FROG

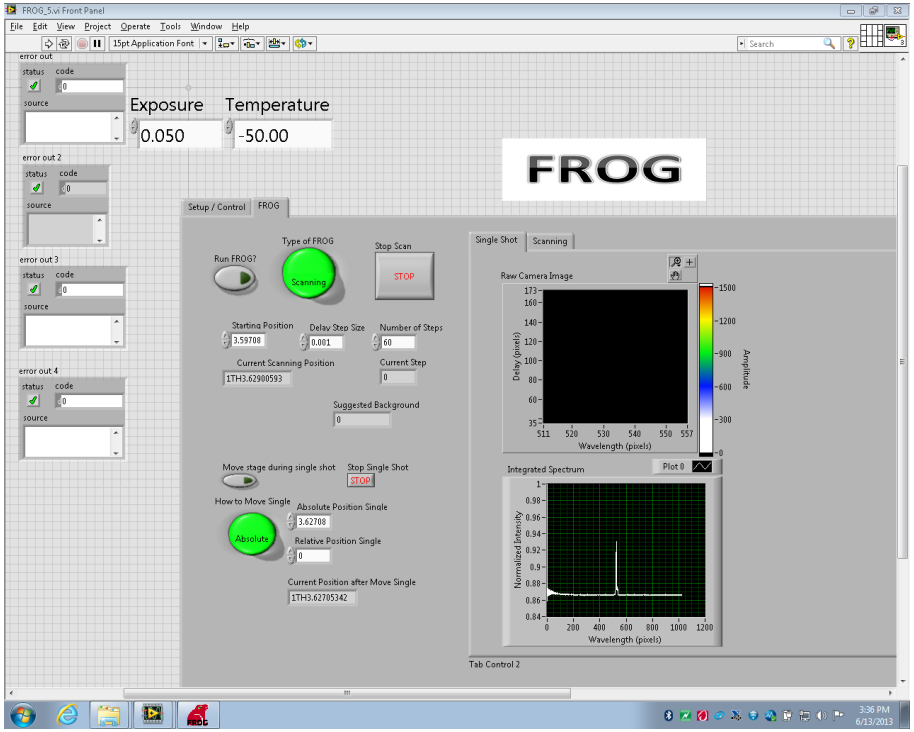
FROG Set-Up


MARS
Spectrometer
M
M
M
BBO Crystal
Focusing
Lens
M
Converging
Mirror
M
Delay Stage
M
M
M
G
BS
ND Filters
M
M
M
M

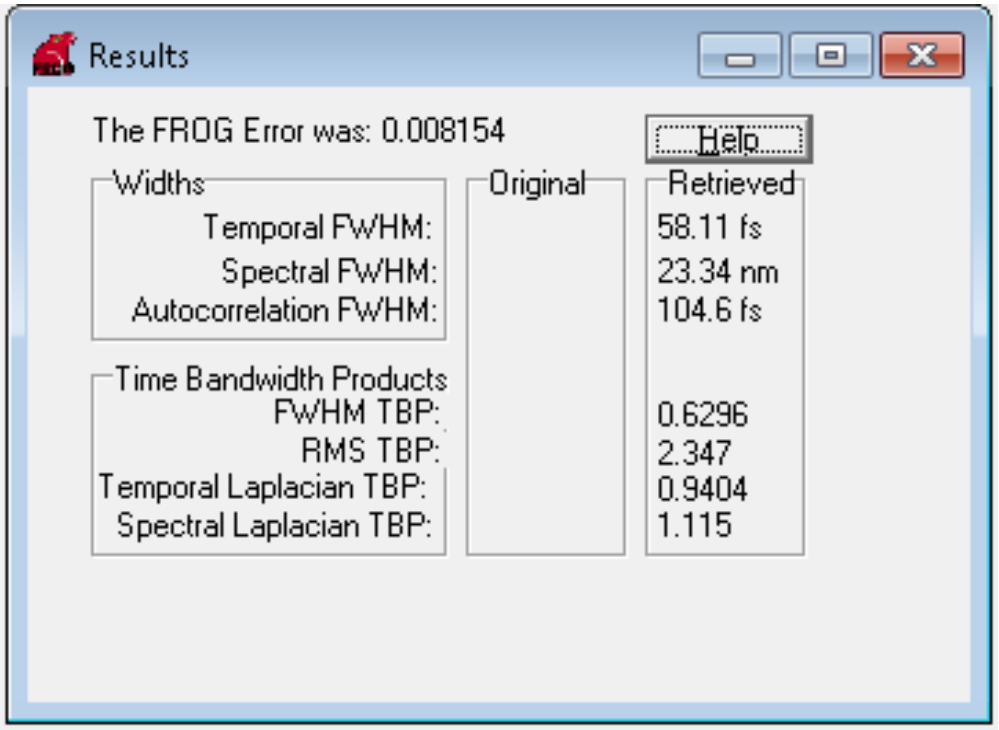
Steps to get data

* Use Single-Shot mode of LabView program to align
* Blue light out of crystal
* Optimize to get brightest blue
* Run trace of Pulse
* Take raw data into a fitting program
* Use that trace to see how short pulse was
* Look at the image created of pulse

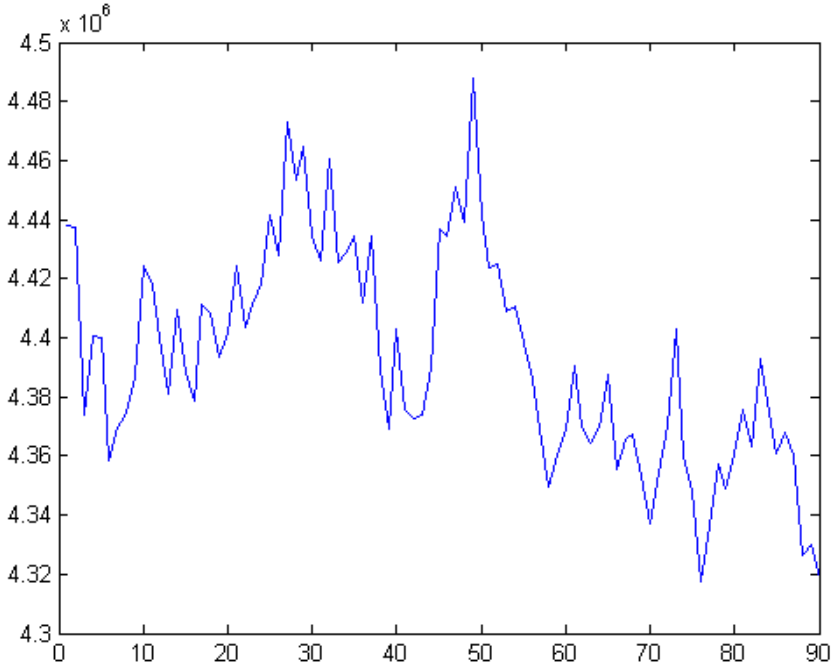
LabView Front Panel



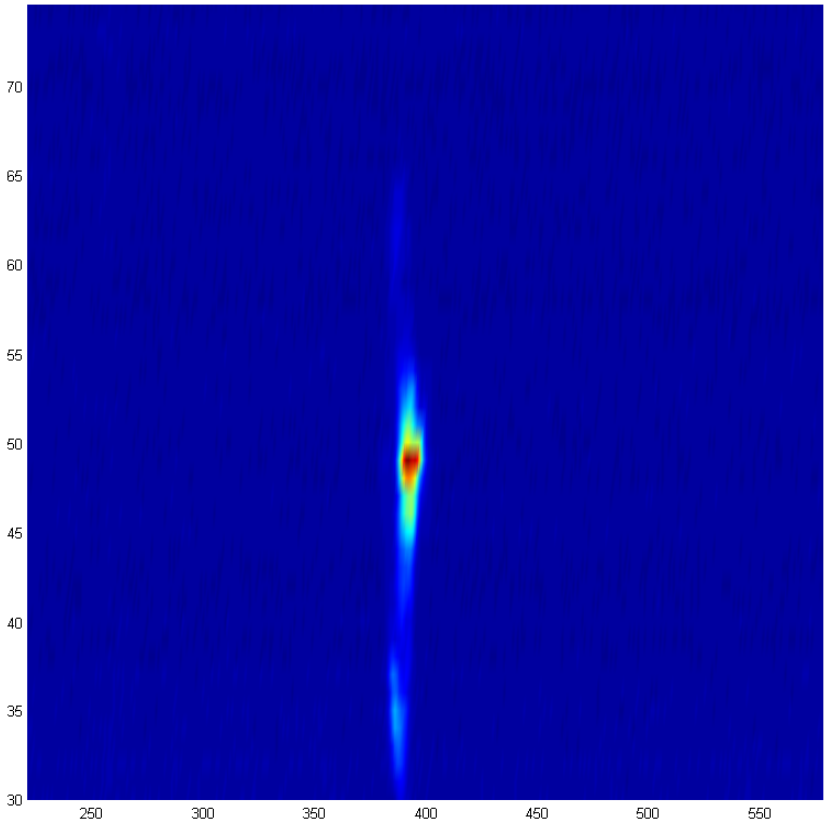
FROG Results



Intensity Plot with Time



Trace



What's Next

* Scheduled more beam time
* Check the FROG for the timing issues
* Investigate why there are wings on the pulses
* Check if Spectrometer is off
* Find bad mirrors and maybe try new crystal