Hi Professor

This week I supposed to measure the laser beam profile and before and after the launch optical, however our CO2 laser power has some problem, the current couldn’t adjust to 40mA as required. So I works on the 2D scan stage, write and testing the auto-measurement program for laser measurement. Here is the summary of the works I done:

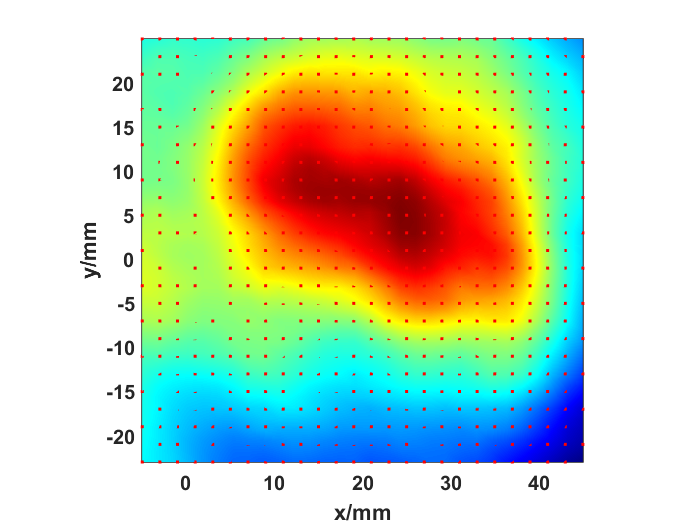
1. Recover the power amplitude from the power signal modulated by chopper

Since the power monitor is combined with chopper, there are two signals from the detector, one is power signal modulate by chopper, the other is reference signal for chopper control. What I do is figure out the phase delay between power signal and chopper signal and then integral two signals to get the real power. the numerical testing has been uploaded on UCDbox at: <https://ucdavis.box.com/s/t2dq2ripg6a25oe3ilbxvifm9kcrfhgv>

1. Measure the Gun source with auto-2d scan stage.

The beam profile of gun source with 88GHz frequency has been measured using auto 2d scanning stage for testing the program, here is the result, where the red dots refer to the scanning grid ,It takes about 7 mins to get 1 frame of profile .The detail measurement document has been uploaded on the UCDbox at :

<https://ucdavis.box.com/s/tqytr26if2gm8yxobs4ujki2xs0dorm4>



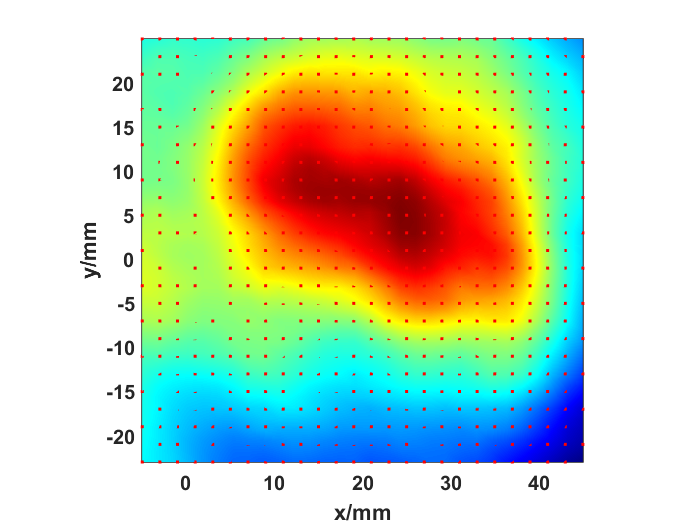
The mode conversion code combined with ray-tracing will be finished in next week ,Some bug still exists when I combined two codes together .nowadays my main time is focused on the testing preparation for laser beam and Calvin will talk with Jon and me about the detail testing works tomorrow.

GPT :

Hi Professor,

This week, I was supposed to measure the laser beam profile before and after the launch optics. However, we encountered an issue with the CO2 laser power—specifically, the current couldn’t be adjusted to the required 40mA. As a result, I focused on the 2D scanning stage, writing and testing the auto-measurement program for laser measurements. Below is a summary of the work I have completed:

1. **Recovering the Power Amplitude from the Modulated Power Signal**  
   Since the power monitor is integrated with the chopper, the detector outputs two signals: one is the power signal modulated by the chopper, and the other is the reference signal for chopper control. I worked on identifying the phase delay between the power signal and the chopper signal, then integrated the two signals to calculate the actual power. The numerical testing results have been uploaded to UCDBox:  
   [Power Signal Recovery Test](https://ucdavis.box.com/s/t2dq2ripg6a25oe3ilbxvifm9kcrfhgv)
2. **Measuring the Gun Source with the Auto 2D Scanning Stage**  
   I tested the auto 2D scanning stage by measuring the beam profile of the gun source at 88 GHz. The red dots in the results indicate the scanning grid, and it takes about 7 minutes to capture one frame of the profile. The detailed measurement document has been uploaded to UCDBox:  
   [2D Scanning Stage Test Results](https://ucdavis.box.com/s/tqytr26if2gm8yxobs4ujki2xs0dorm4)



The mode conversion code combined with ray-tracing is expected to be completed next week. There are still some bugs to resolve when integrating the two codes. Currently, my main focus is on preparing for laser beam testing. Calvin will be discussing the detailed testing plans with Jon and me tomorrow.

Best regards,  
Xinhang