

Before Experiment

- Center photodiode stage (2.5)
- Turn on all necessary equipment:
 - Three power strips
 - Photodiode
 - PZT amplifiers
 - LED (turn key)
 - Light source (e.g. XCite lamp)
 - * Note: If using the excitation lamp, only turn it on for the duration of the experiment. Additionally, if you turn the lamp on, let it remain on for at least 30 minutes.
- Set to the correct circuit: (1) V_C : unclamped or (2) V_O : clamped
- Readjust all filters as necessary (adjust the cutoff frequencies for V_O and V_D as needed for your experiment)
 - V_O filter (Kemo BM8, left side)
 - * 2 kHz, normal setting (“Pul”)
 - * Toggles at SE, DC, 1x gain, 1 (normal signal polarity)
 - V_D filter (Kemo BM8, right side)
 - * 2 kHz, normal setting (“Fla”, flat response to f_C)
 - * Toggles at SE, DC, 1x gain, 1 (normal signal polarity)
 - $V_{mod,CL-PZT}$ filter (Butterworth, left side)
 - * Low-pass
 - * 0 dB gain
 - * Flat delay
- Check PZT amplifiers
 - Open-loop (left) centered at 55 and closed-loop (right) centered at 50

- Ensure closed-loop amplifier has CL on (green indicator)
- Turn on television. Using the remote, switch to input 1 (Menu, Input, Input)
- Center the condenser
- Check that the photodiode is centered at zero when there is no fiber. Adjust the potentiometer to center it if not.
- Host computer password: (kThoise)
- Restart LabVIEW and open the appropriate VIs:
 - Probe characterization: “Probe Characterization (SI)” and “Beta (SI)” [C:\LabVIEW\Experimental modules\]
 - Load clamp, ver.1 (PID): “Mechstim” then “Clampy.lvproj” [C:\Users\Hudspeth\Documents\Labview Data\wait for next scan\]
 - Load clamp, ver.2: “Variable load clamp” then “Load clamp.lvproj”
 - * In the real-time project, open and run “Target - Main program”
 - * Input the fiber’s stiffness and drag coefficients, set the gain to zero
 - * Ensure that the scaling factors are the same between VLC and LC for F_E , k_V , ξ_V , and m_V . If you wish to control any of these parameters dynamically, toggle the indicator to green for those parameters.
 - * If the clamp is running successfully with a fiber and the photodiode turned on, you should see the red scale in the upper-left update in real time when the gain is set to a nonzero value.

After Experiment

- Center photodiode stage (2.5)
- Turn off all necessary equipment:
 - Three power strips
 - Photodiode
 - PZT amplifiers
 - LED (turn key)
 - Light source (e.g. XCite lamp)
- Return filters to their default values:
 - V_O filter (Kemo BM8, left side)
 - * 2 kHz, normal setting (“Pul”)
 - * Toggles at SE, DC, 1x gain, 1 (normal signal polarity)
 - V_D filter (Kemo BM8, right side)
 - * 2 kHz, normal setting (“Fla”, flat response to f_C)
 - * Toggles at SE, DC, 1x gain, 1 (normal signal polarity)
- Close LabVIEW
- Thoroughly clean objective, condenser, mirrors, and stage
- Remove any broken glass, pipettes, and reagents from the room

Troubleshooting an unresponsive target computer

If the real-time software does not connect to the target computer, or if an error arises in the real-time system, you should try the following:

1. Close all LabVIEW software on the host computer. Restart all software, and try to run the software again. Note that this solution also works if LabVIEW reports an out-of-memory error.
2. If step (1) does not work, close all software and shut down both the host and target computers. Turn both computers on (pw: (kTnoise)), and try to run the software again.