Laser locking checklist

Streamline the Pound-Drever- Hall technique with Moku:Pro

1. Setting up the experiment

- Set up Moku:Pro with the Laser Lock Box, an optical cavity, an electro-optic modulator (EOM), an amplifier, a laser source, and any cables/connectors you may need.
- Connect inputs: Connect the reflected light photodetector to Input 1 and the transmitted light photodetector to Input 2.
- Connect outputs: Connect the fast feedback and slow feedback signals to Outputs 1 and 2.

2. Modulating the laser

- Generate a local oscillator (LO) signal with an appropriate amplitude and frequency to drive the EOM.
- Output the EOM modulation signal to Output 3 and turn it on.

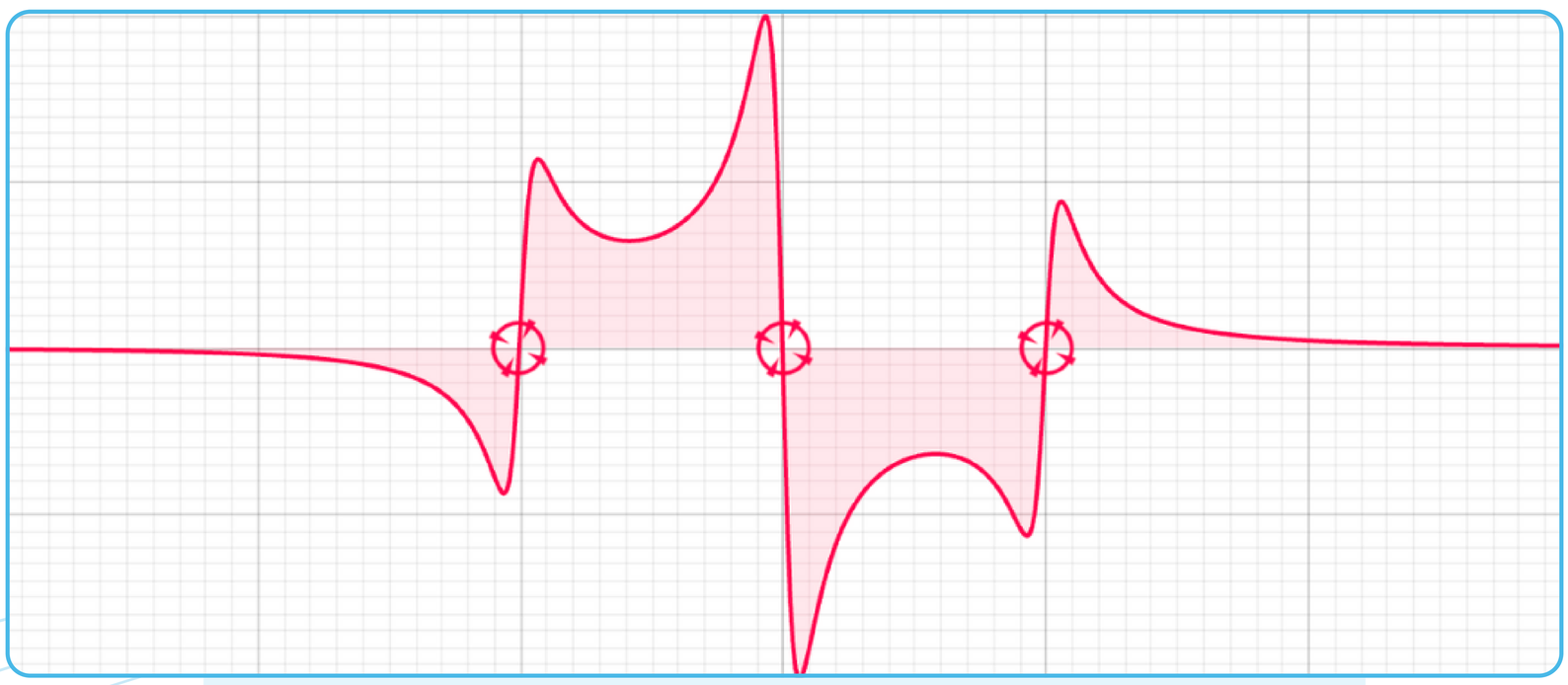
3. Finding a resonance

- Scan the laser frequency with a triangle waveform.
- Demodulate the RF signal from the photodetector using the LO.
- Monitor the error signal before the fast controller with the embedded Oscilloscope.
- Center the resonance in the middle of the scan on the embedded Oscilloscope.

4. Locking the laser

- Turn on Lock Assist.
- Tap on the highlighted zero-crossing you want to lock on to.
- Adjust the PID parameters to optimize the lock.

Error signal vs. sweep frequency



Lock Assist can help you lock on to any of the highlighted zero-crossings.