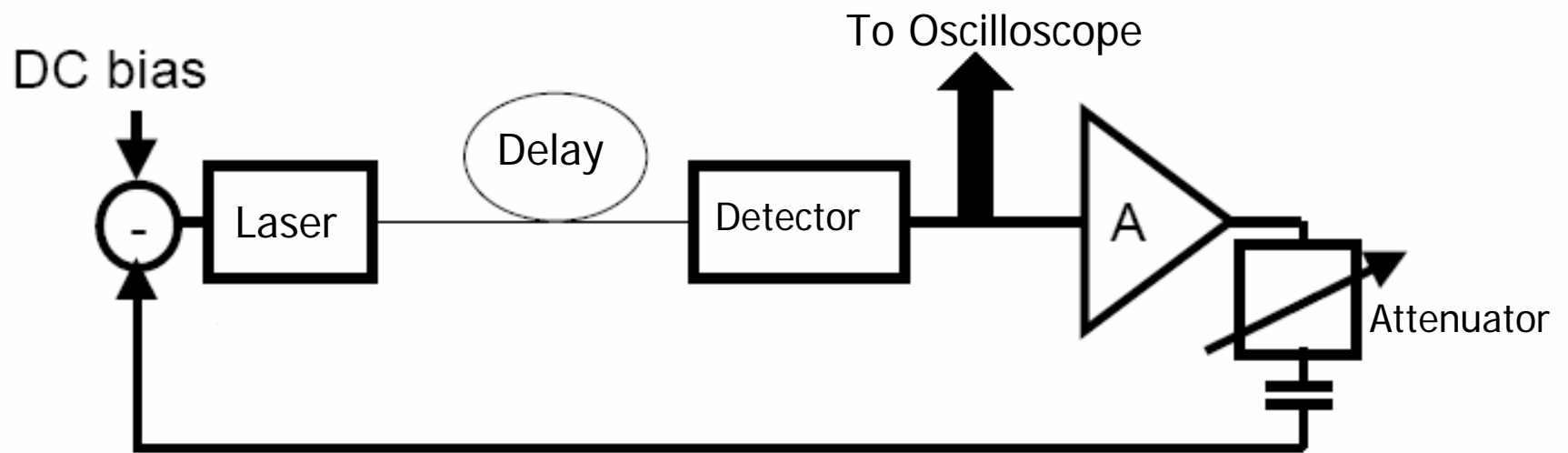


**Dynamics of Semiconductor Lasers
with Opto-Electronic Time-Delayed
Feedback: Experimental Observations**

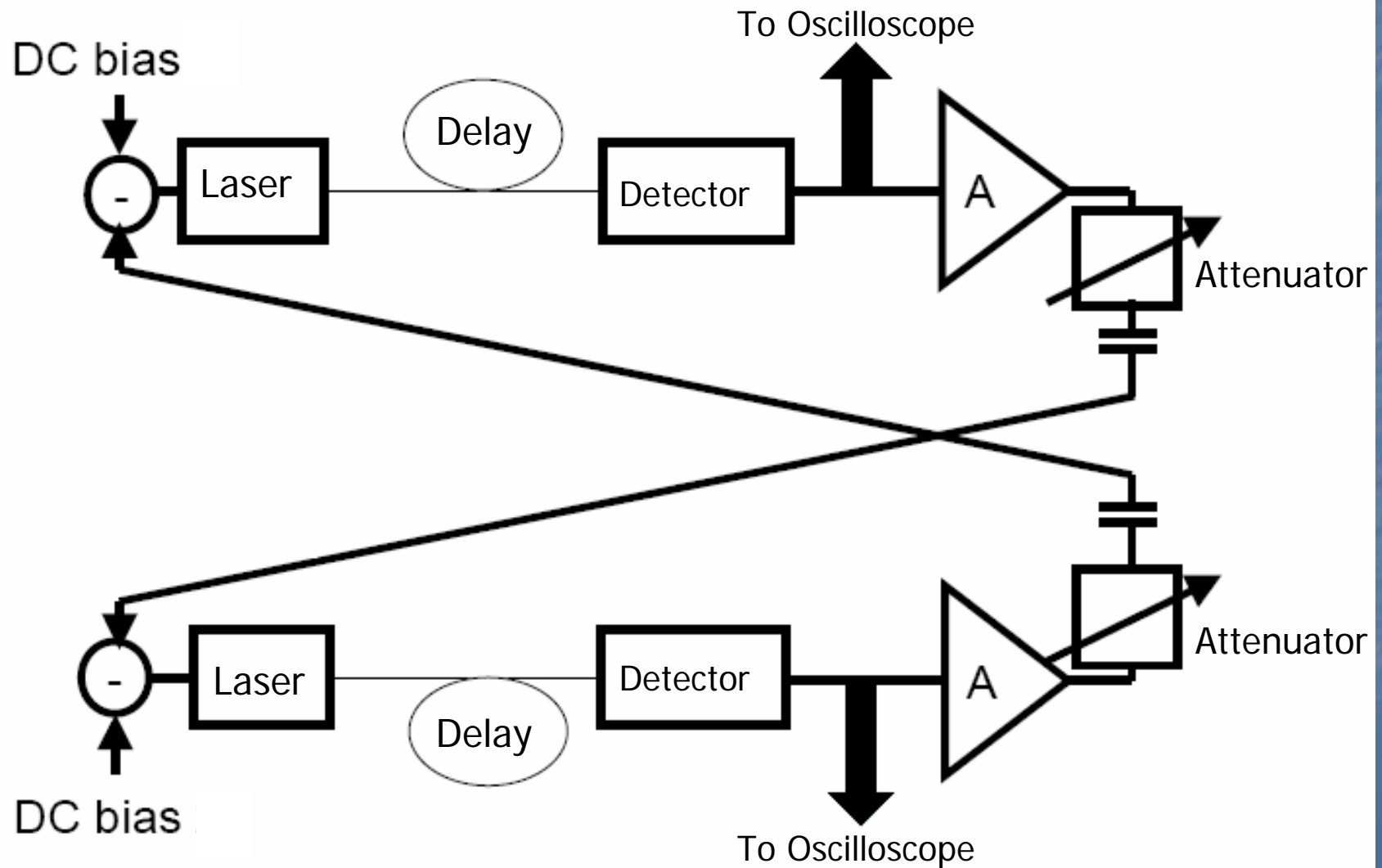
Caitlin Williams, Grove City College

Collaborators: Rajarshi Roy, Thomas E. Murphy,
Adam Cohen and Bhargava Ravoori

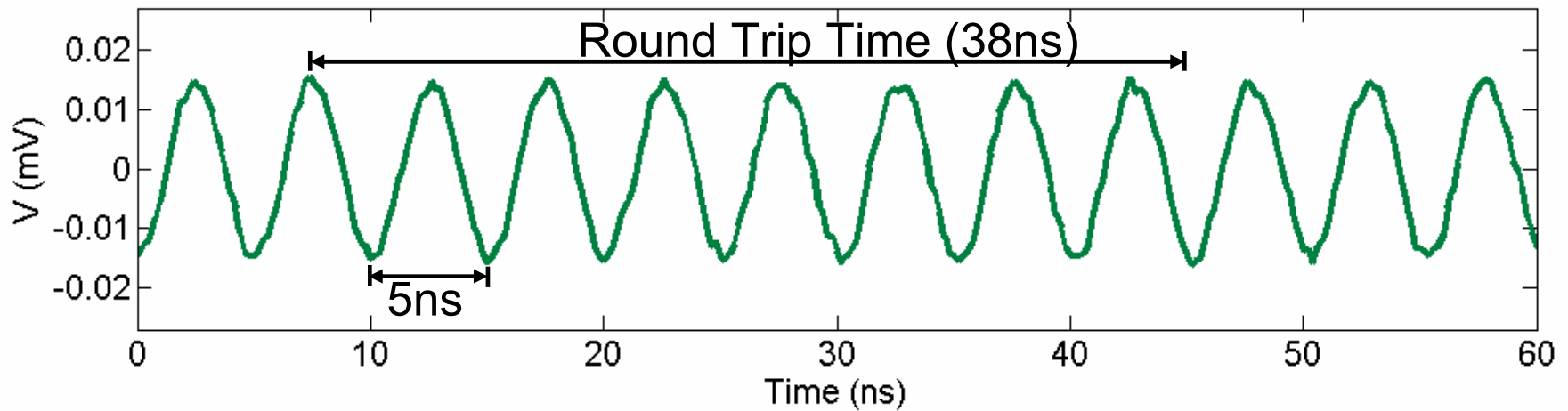
Experimental Setup: Single Laser



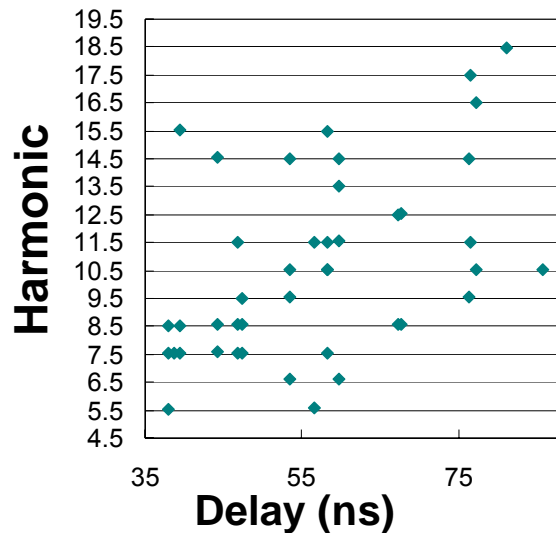
Experimental Setup: Two Lasers



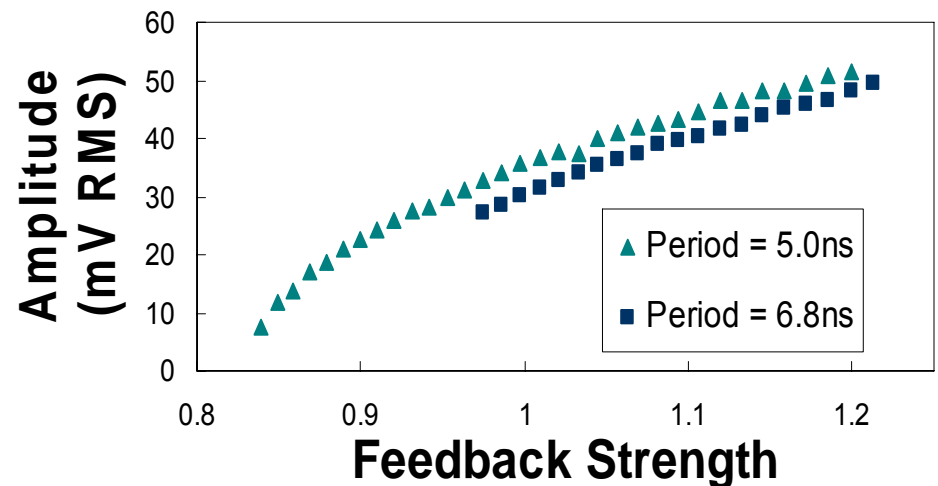
Results: Single Laser



Different Possible Harmonics

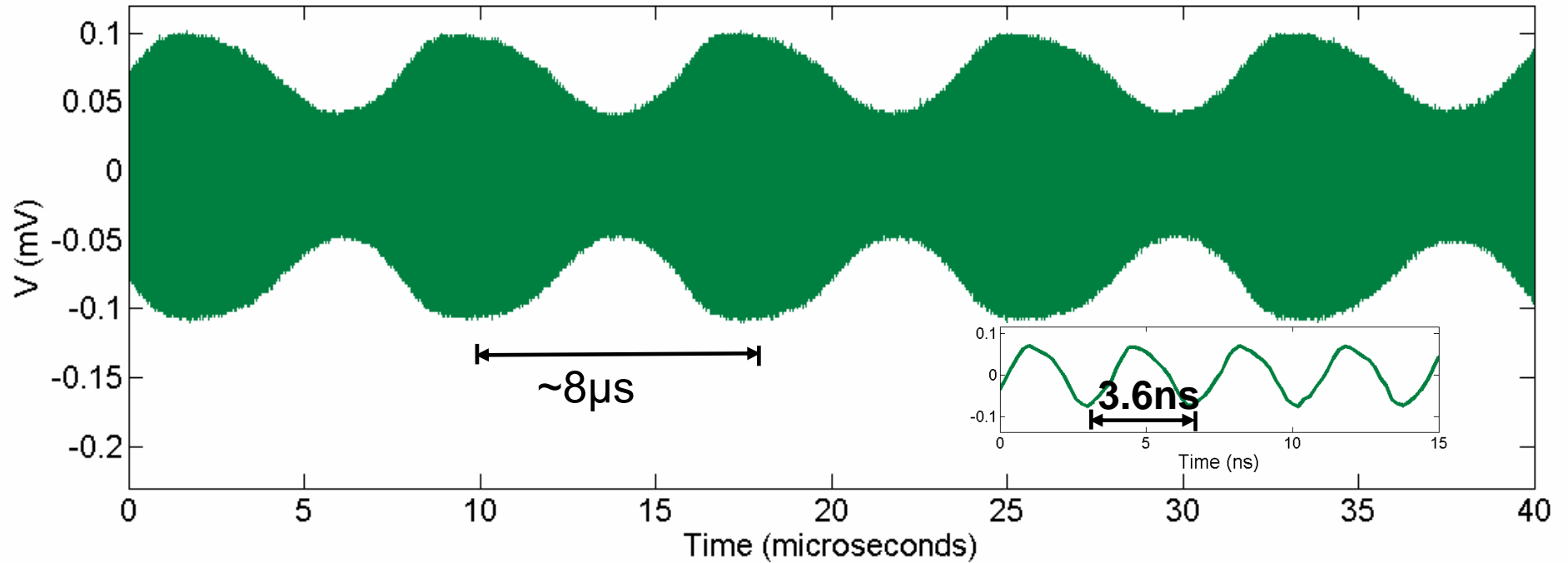


Signal Amplitude vs. Feedback Strength

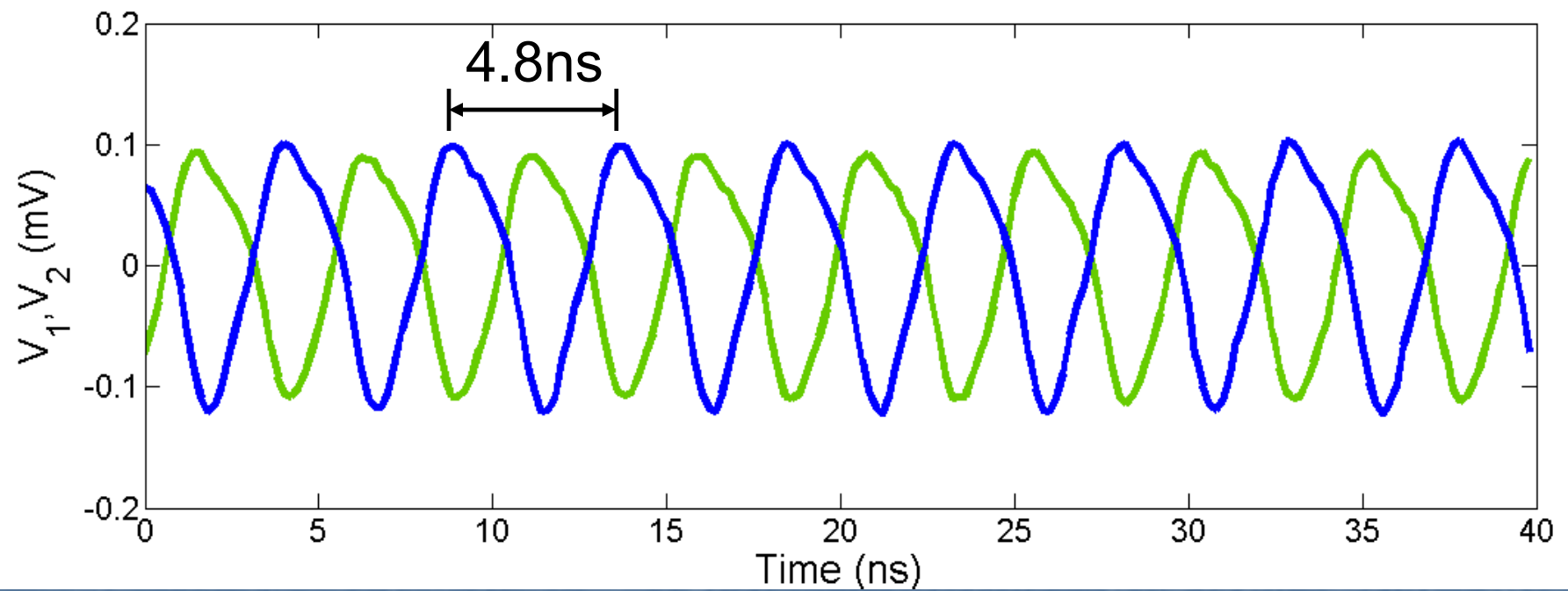


Results: Single Laser

Slow modulations of sinusoids



Results: Two Laser



Conclusions and Questions

- Complex behavior
- Half-integer harmonics for single laser, integer harmonics for two lasers
- Multiple stable states
- Slow pulsing
- Experimental behavior qualitatively matches results from modeling