

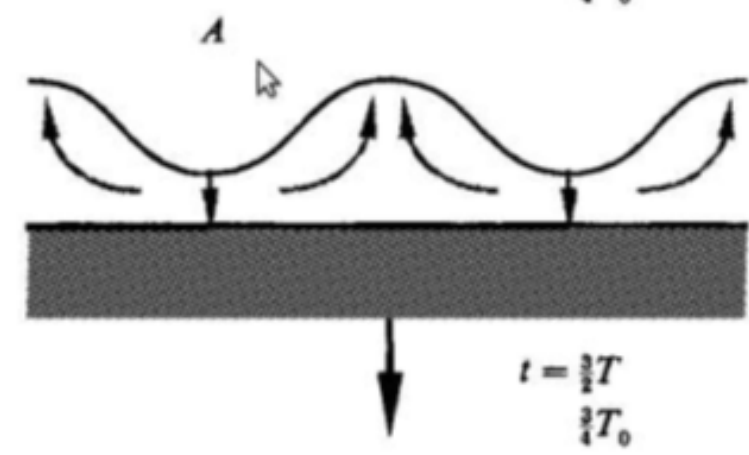
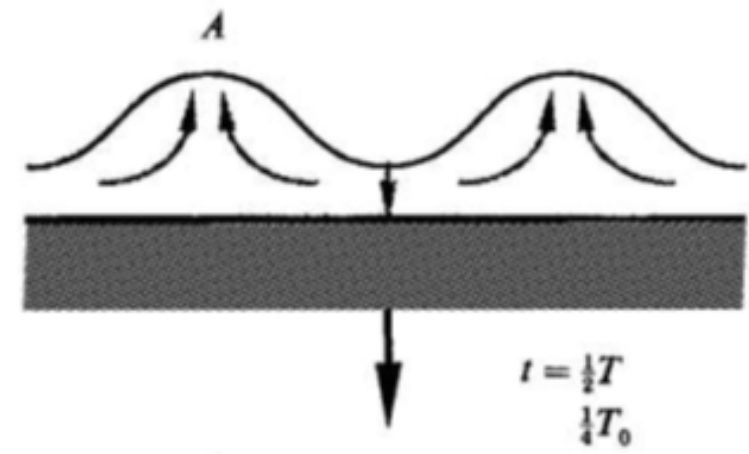
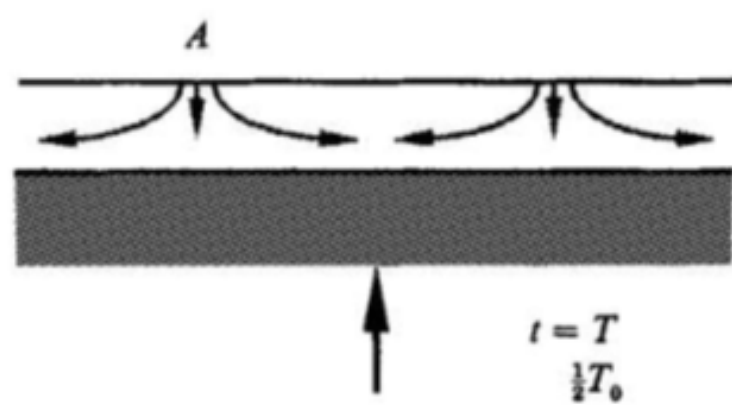
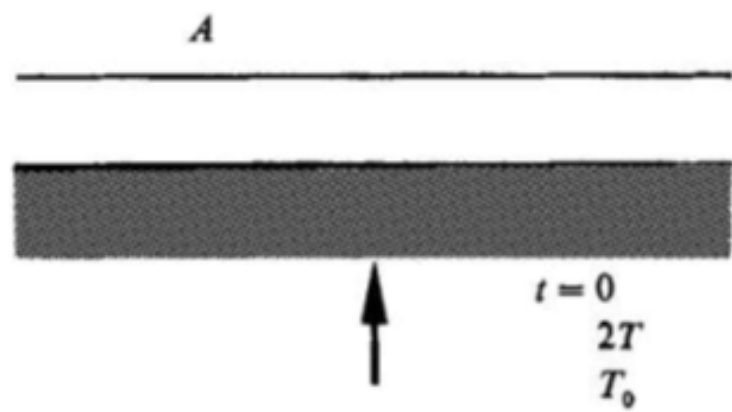


Faraday Waves

John Bollenbacher
Grace Chambers
Tara Cunningham
Preston Putzel

What are Faraday Waves?

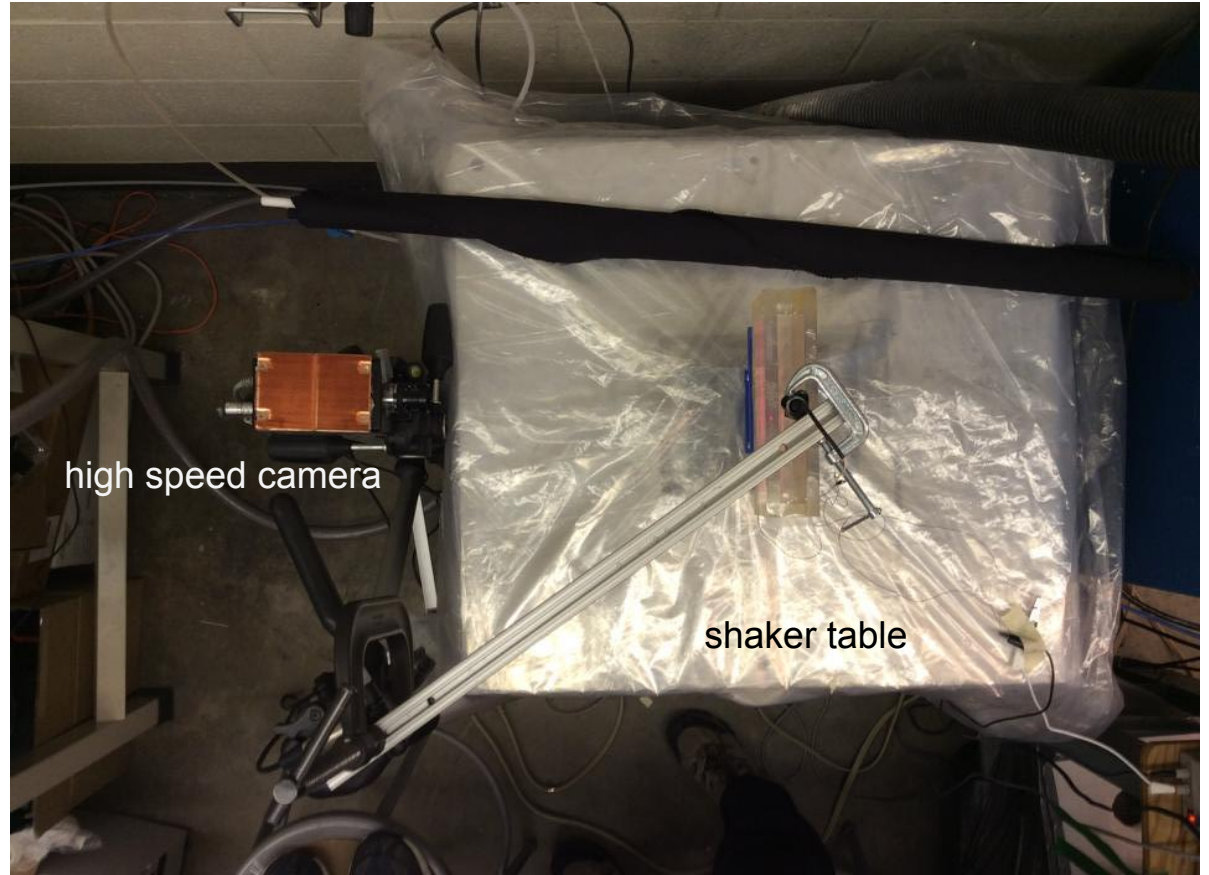
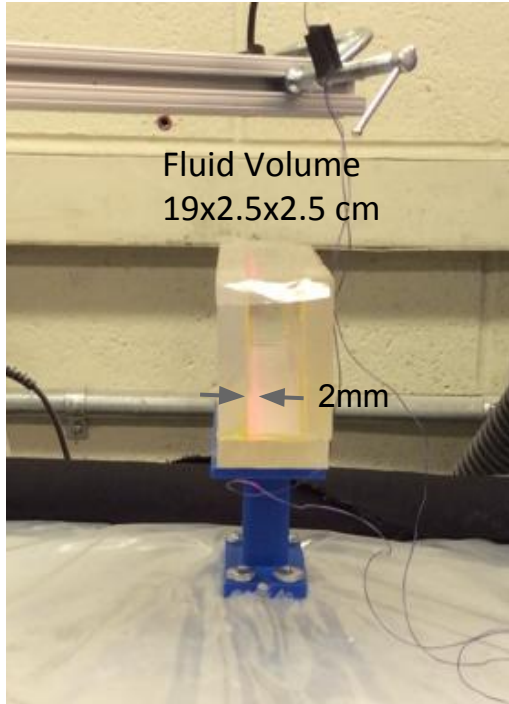
- Nonlinear surface waves
- Occur when vertical vibrations are applied to liquids in closed containers
- Subcritical bifurcation
- Patterns including stripes, squares, hexagons, higher-dim. polygons, rotationally symmetric patterns, and many others



Goals and Expectations

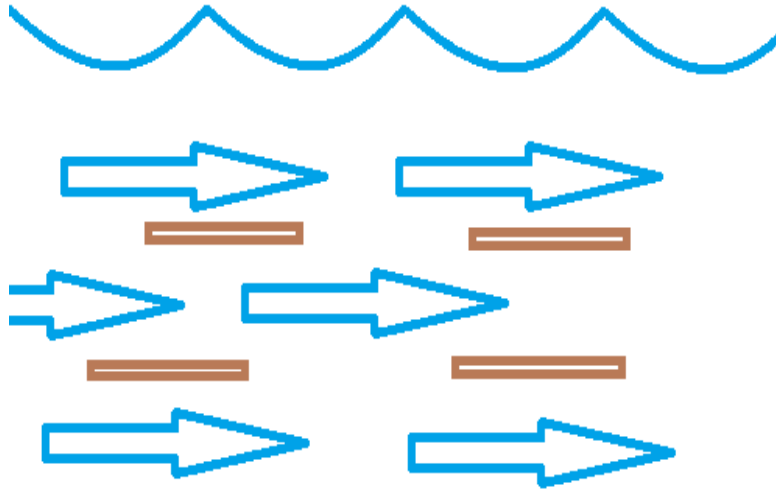
- Observe onset of Faraday waves
- Qualitative information about the flow field
- Convection currents

Apparatus



Kalliroscope

Rheoscopic = “current showing” fluid

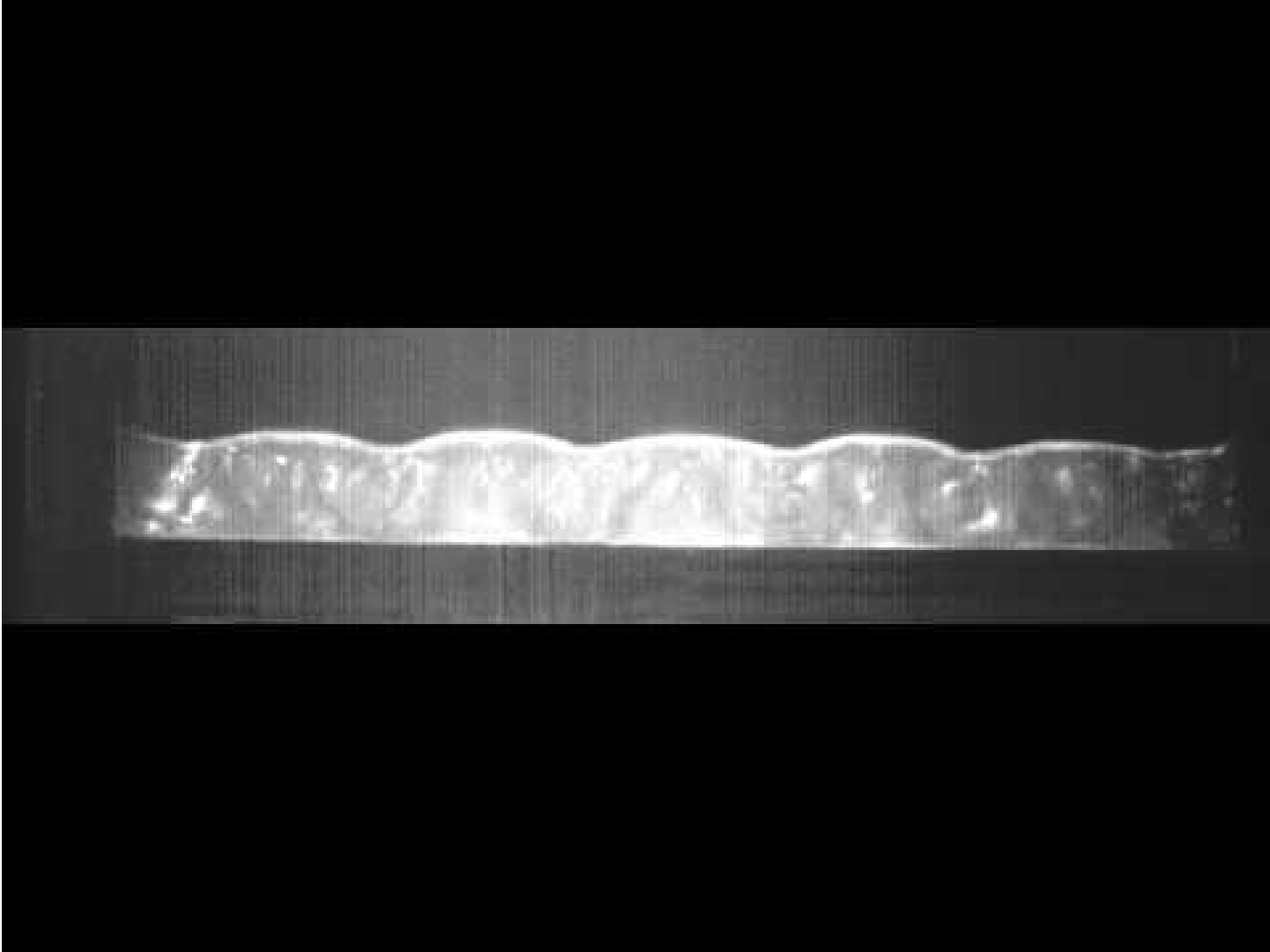


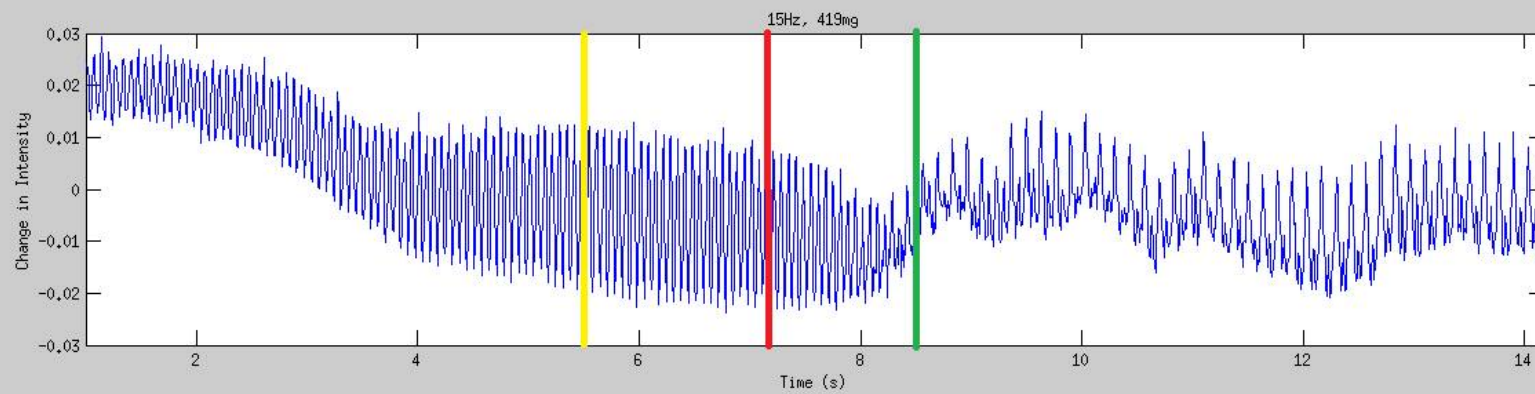
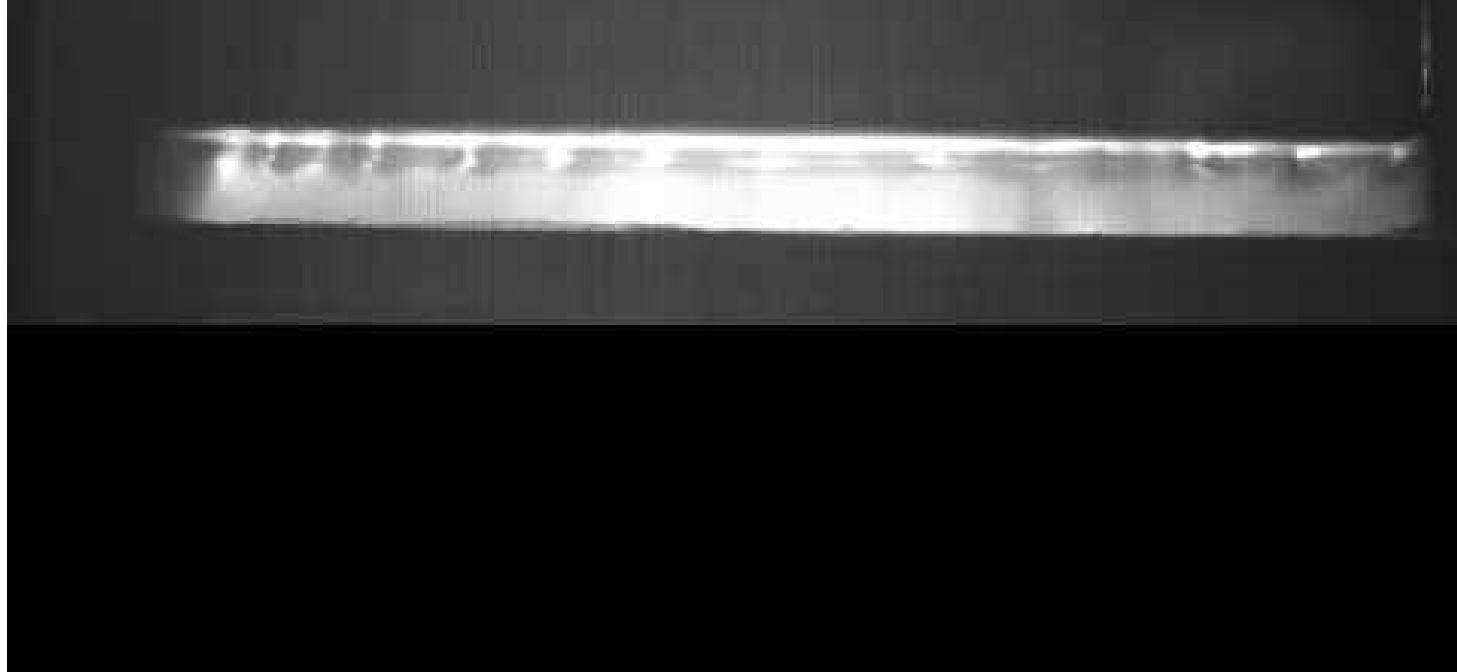
The Experiment

- Set frequency
- Attempted to “jump” to amplitude

- Measurements for increasing amplitudes with fixed frequency

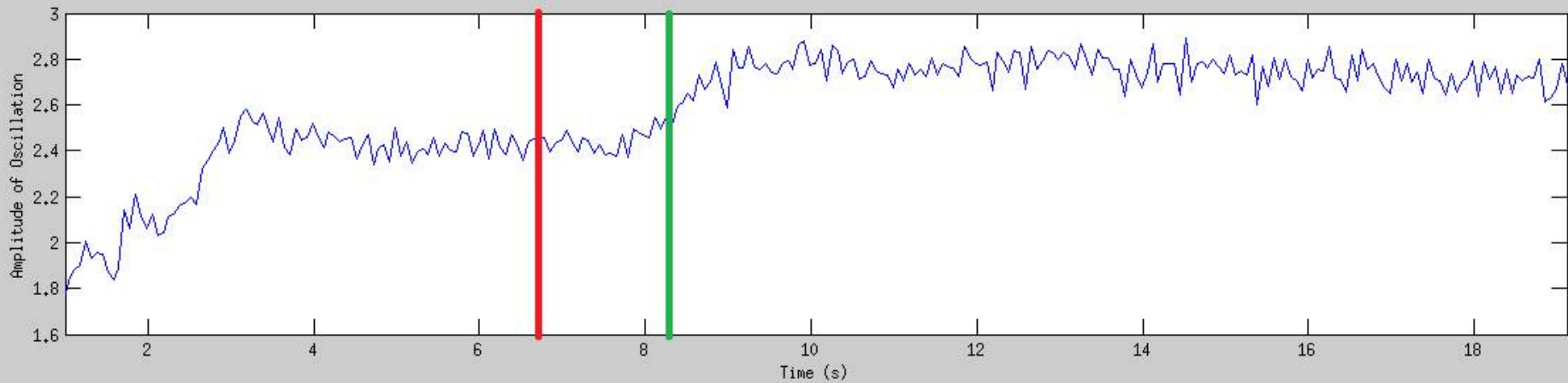
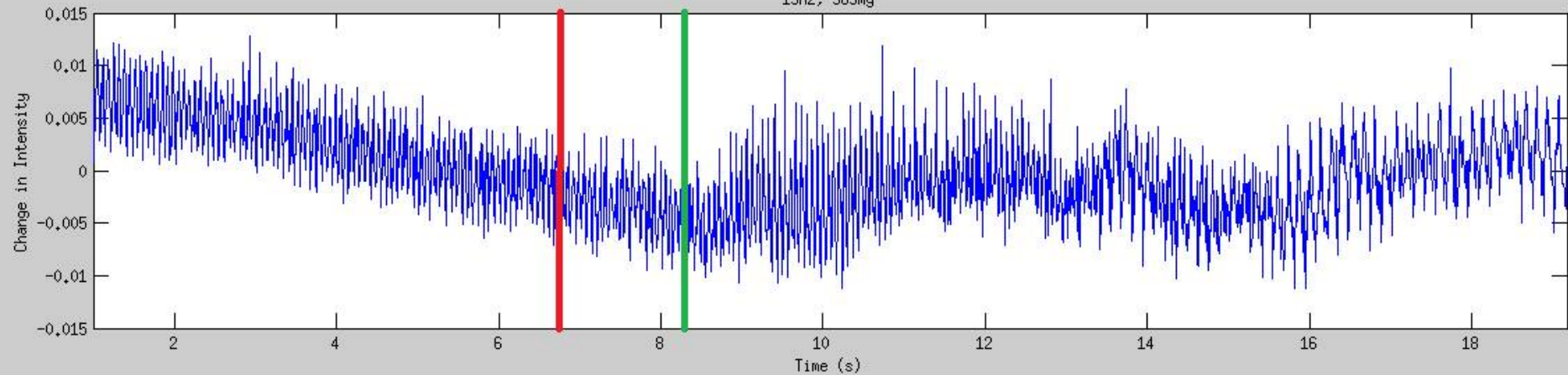
RESULTS



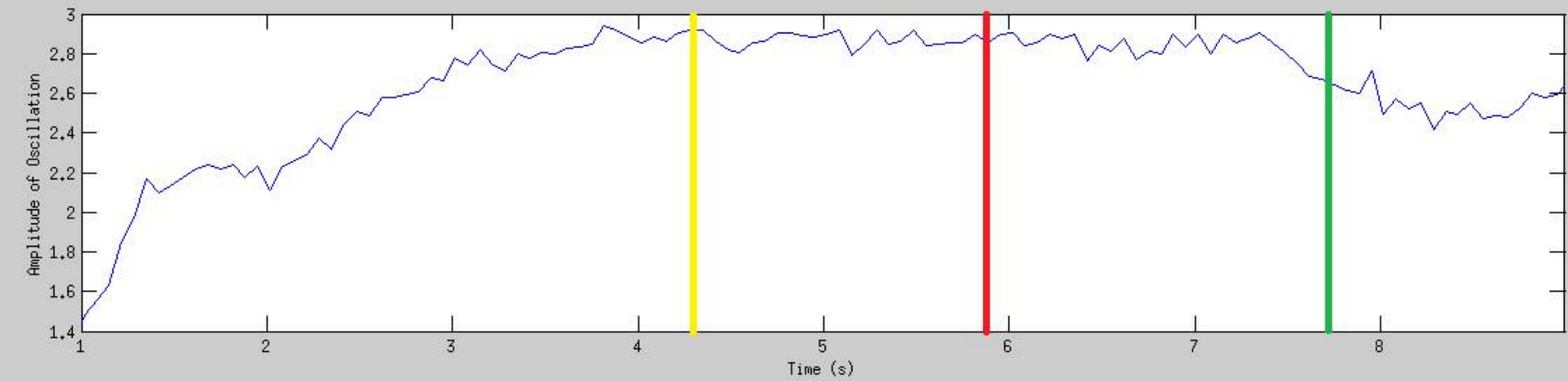
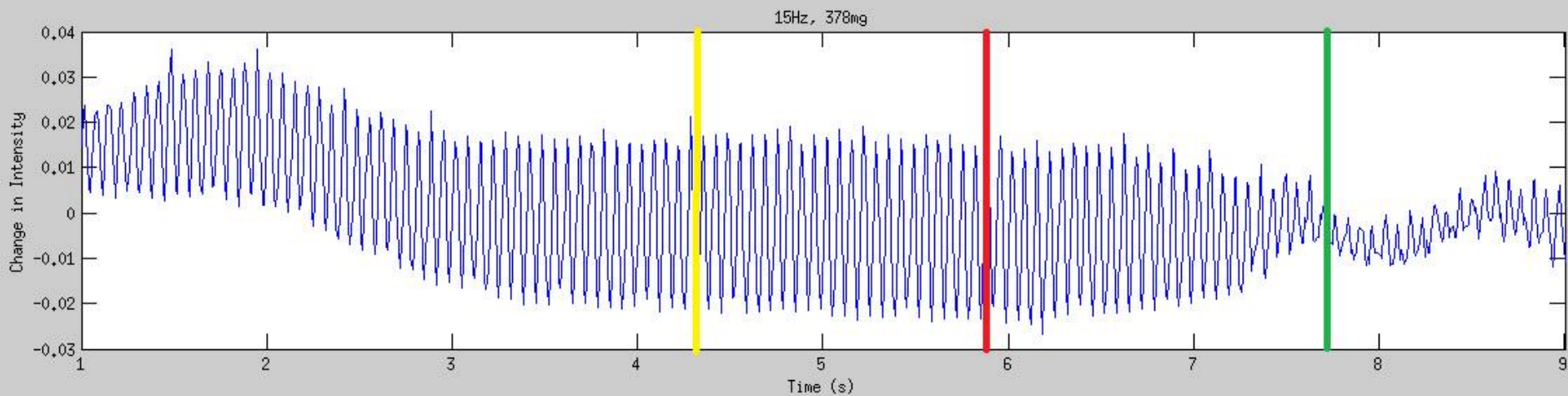


363mg

15Hz, 363mg

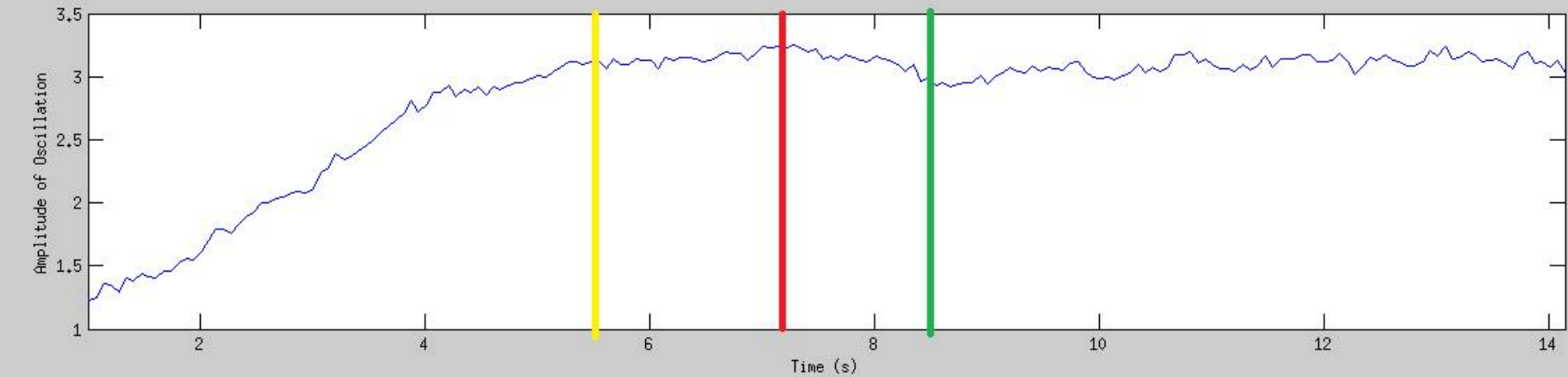
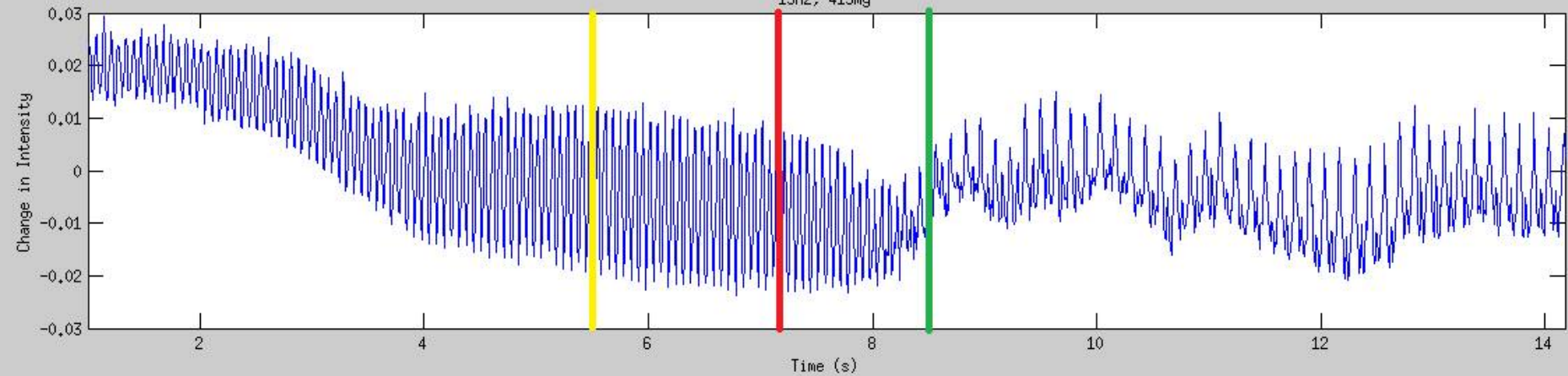


378mg



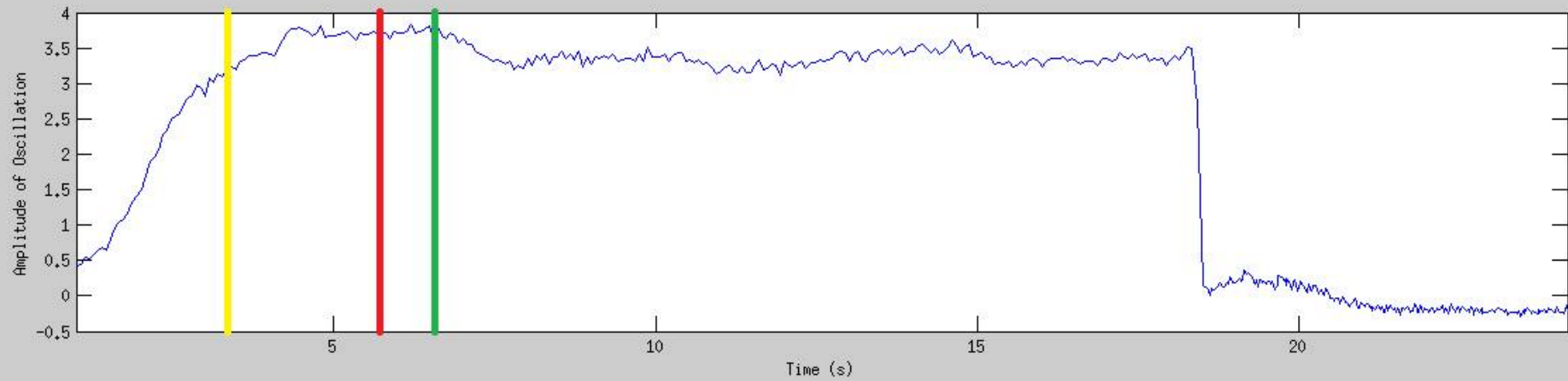
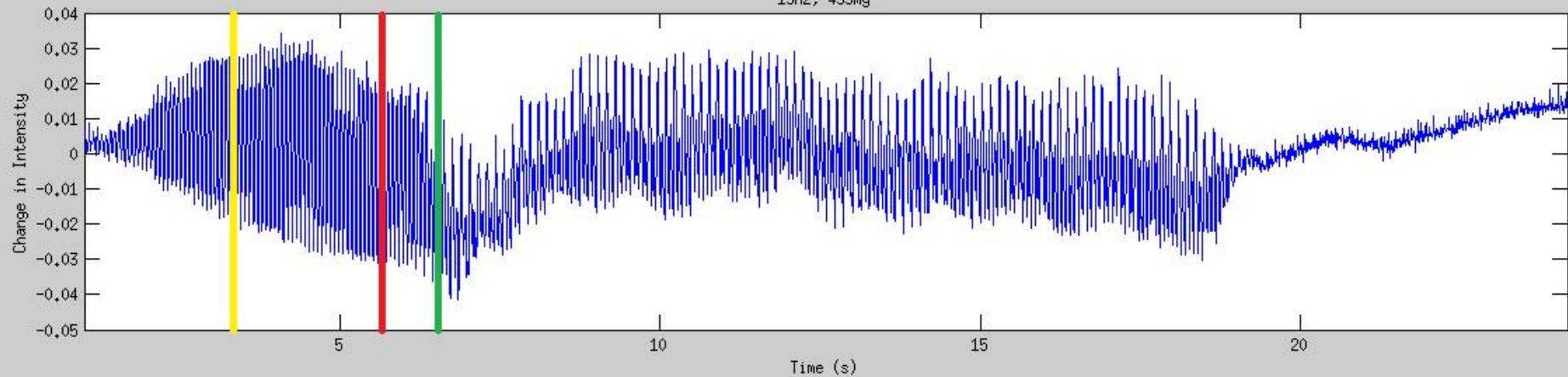
419mg

15Hz, 419mg



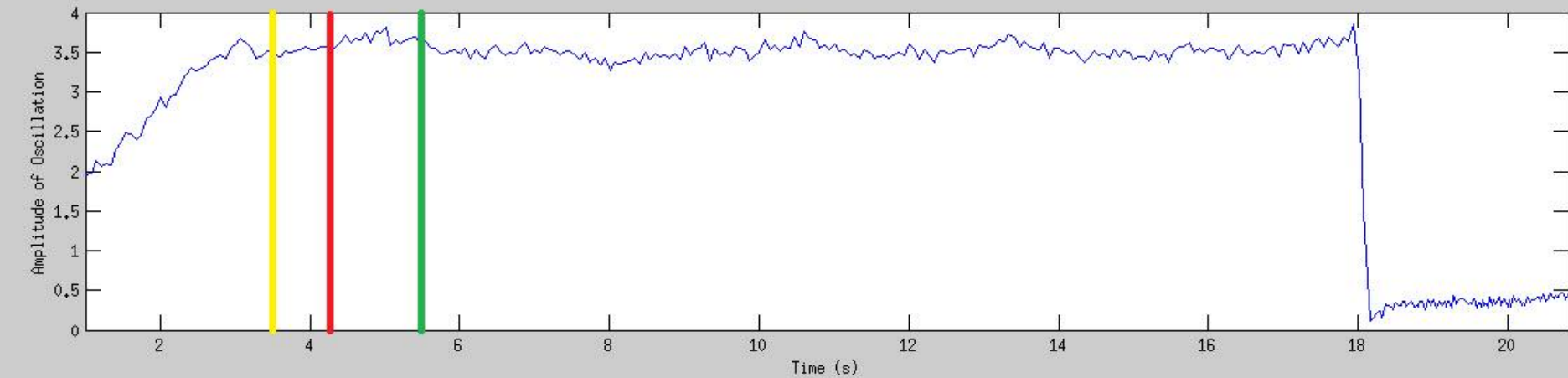
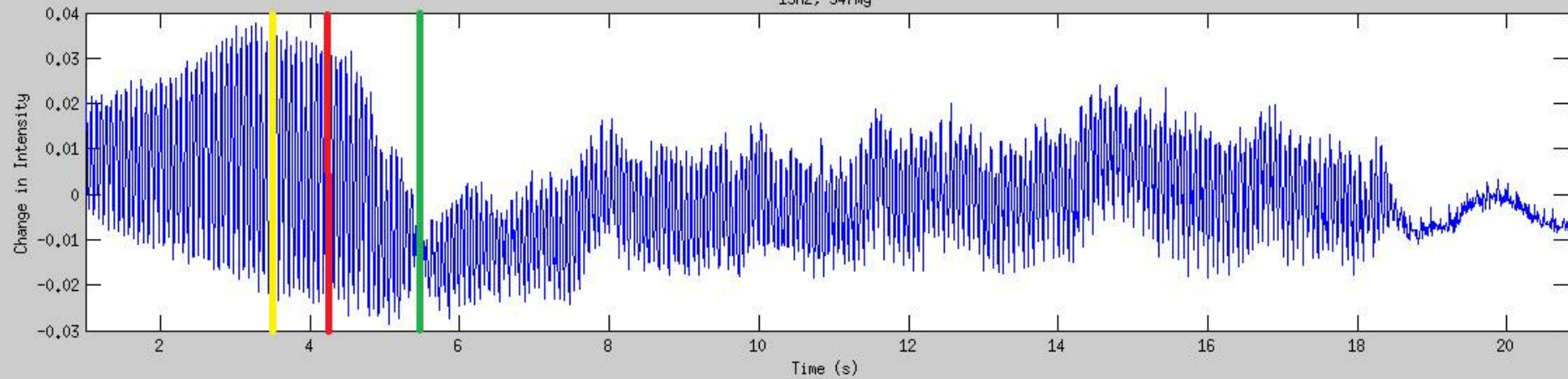
493mg

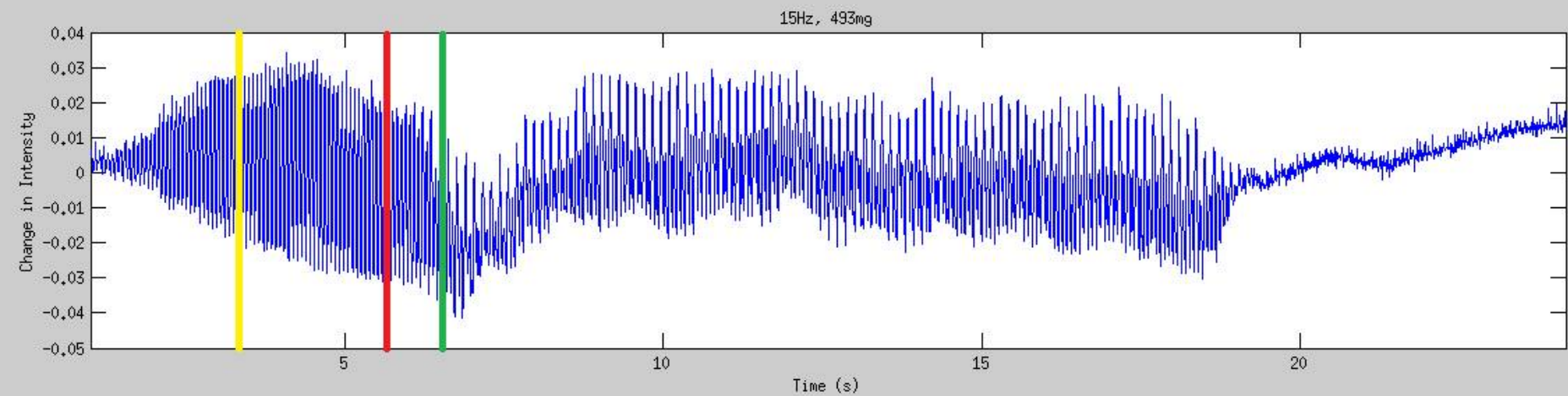
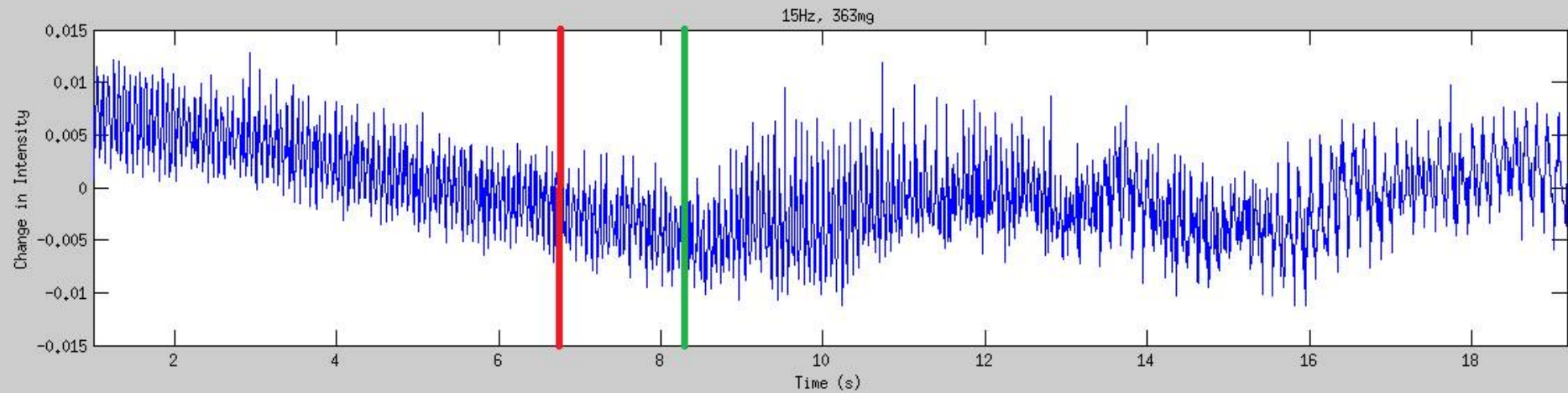
15Hz, 493mg



547mg

15Hz, 547mg





Next Steps

- Different frequencies
- Boundary conditions
- Different viscosity fluids
- PIV analysis