Faraday Tests of Pump/Probe with Samples (tvm & rxp)

- **Implemented Pump Circular Polarization Modulation with Pockels Cell.**
- **Tested AOM Modulation of Mode-Locked Beam.**
- **Tested for Faraday rotation with two Samples (GaAs/GaAsP & Bulk GaAS).**

Observed Problems

1) Measurements are dominated by pump scattering from the sample surfaces (particularly bad with GaAs/GaAsP sample).
2) Pockels Cell Driver has HV breakdown on negative voltage side.
3) Sample quality is very poor. GaAs/GaAsP has hatchmarks. GaAs is very uneven in thickness and quality.

Tests for Signal Verification

- Mode-Locked Signal but no CW signal.
- Signal disappears without Pump/Probe overlap.
- Signal shows Pockels Cell Voltage dependence. No signal with 0 V.
- Optimum Pump/Probe power ratio should be about 10/1.
- Signal with only Pump before Probe time delays.

8/29/07

Best Results with GaAs/GaAsP Sample

Mode-Locked: V= + - 1500 V (only 61 degree rotation)
Signal/Background ~ 70% (Background = Probe Line Blocked).
CW: No evidence for signal
Linear Polarization: No signal.
No Pump/Probe overlap: No signal

Best Results with GaAs Sample

Mode-Locked: V=+ - 2200 V
Signal/Background ~ 70%.
CW: No signal
Linear Polarization: No signal

Mode-Locked: V=+ - 1200 V
Signal/Background ~ 22%

AOM Modulation is not competitive with Polarization Modulation.
As yet no wavelength tuning.
Robust signal currently is lost.

8/29/07