How gil have succeeded to see modulated Xe signals

25/3/21

# What I saw

I set up a signal which measures the alkali signal under changes in the axial field. With that magnetometer, I was able to scan the slow modulation to match the nuclear resonance (52.5Hz). When the modulation coincided with the resonance, I saw that the field responds in the first harmonic of the signal.

# Parameters

1. Magnetic
   1. Axial field 15ma in BB – into Bz coil (52.5Hz Xe 129 resonance).
   2. Fast and slow modulation came from AG3 and summed using a bias tee – into ESR coil.
      1. CH1
         1. Slow modulation depth: 1.51Vpp
      2. CH2
         1. Fast modulation: 32.626KHz at 2.5Vpp.
         2. Freq/dev 6.46KHz
         3. Internally modulated by channel 1.
   3. Transverse coils
      1. Calibrating signals was done at 100mvpp
2. Temperature: 133C
3. Optics
   1. Pump
      1. 120ma
      2. 200mv
      3. 500 mw (max)
   2. Prob
      1. 102ma
      2. -12mv
      3. 5mw
4. Worked with main diode

# LIA

* Makeshift LIA
  + ZAD-8 mixer
  + Signal from main diode goes into 50ohm term, and into 1KHz HPF
  + Ref is CT2
  + Out signal goes through 20KHz LPF
* SR830 – really unused
  + Insignal from CT2 goes through LPF10KHz
  + No line filters
  + TC 1s
  + 24db/oct