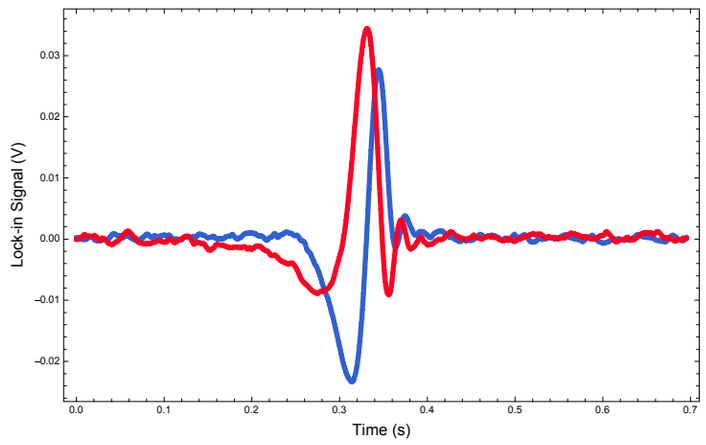
53

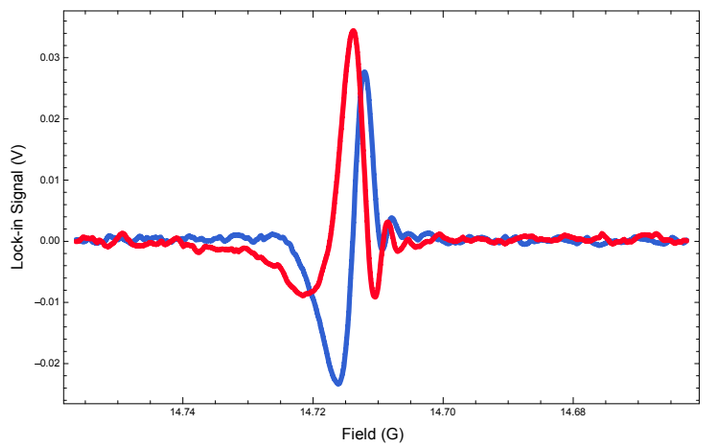
NMR is science

62.66 kHz, 136 mG/s

Signal vs Time



Signal vs Field



Water

John Blanchard, 2017

Matter-Antimatter Symmetry (MAM) | Helmholtz-Institut Mainz

Field strength: 14.66-14.76 G

Why is this your favorite spectrum?

The efforts required to acquire this signal served as an excellent example of the fact that while basic NMR might be straightforward, it's not necessarily easy. If it's not immediately clear, this is a low-field CW-NMR experiment. The B0 field was produced using a bicycle-wheel-based Helmholtz pair, and swept around a central value of 14.72 G at a rate of 136 mG/s. The sample was a 20 mL syringe filled with distilled water, and the probe was a Bloch-esque 3D-printed crossed-coil configuration utilizing an SR830 lock-in amplifier (no preamp) to both irradiate the spins and measure the transverse magnetization. The apparatus was unshielded, the spins were thermally polarized, and the magnet was unshimmed and stabilized with only passive elements.