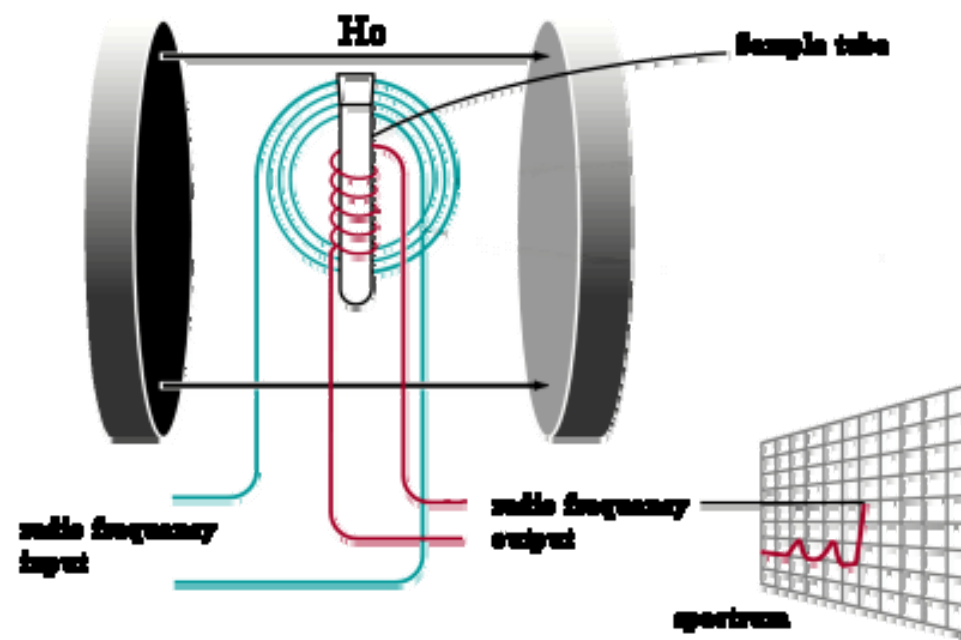


NMR III: Spektrometer



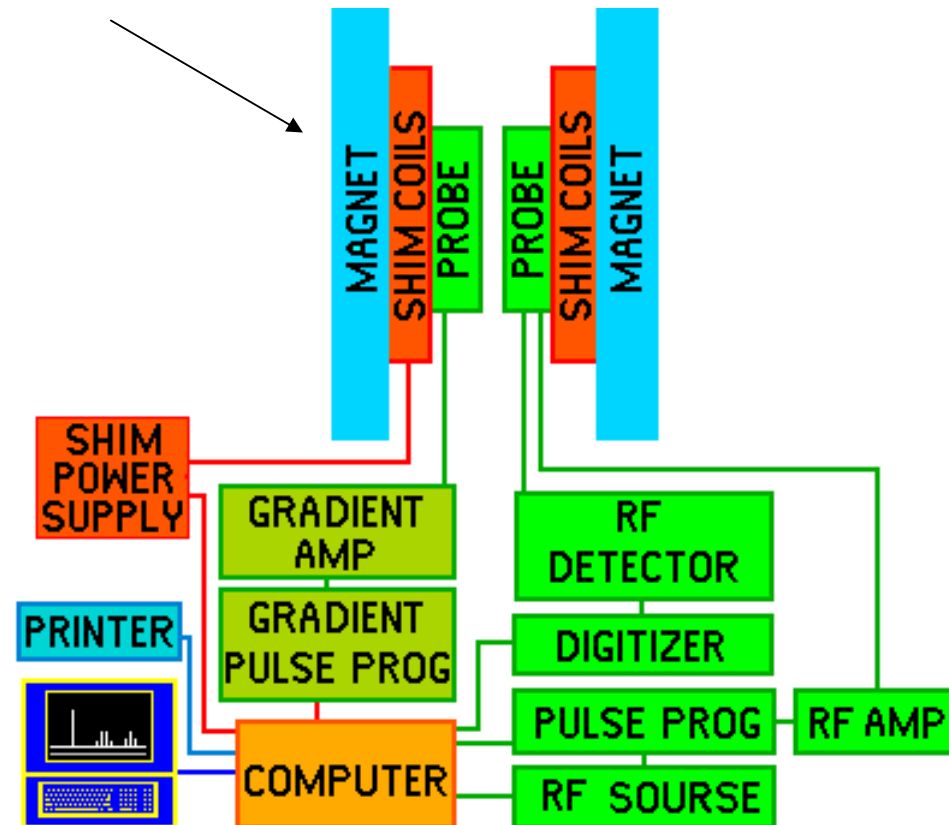
www.biochem.mcw.edu/people/faculty/volkman/_NMR_tour.html

NMR Prinzip

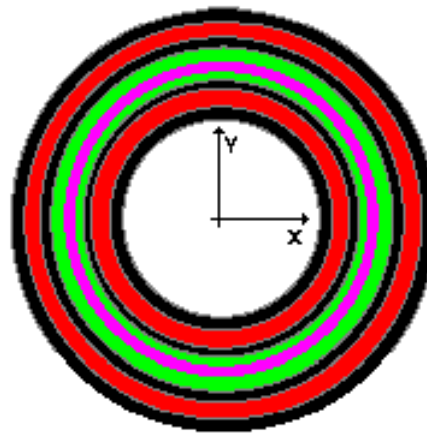


www.chem.ucalgary.ca/courses/351/Carey/Ch13/1305.gif

NMR Aufbau eines Spektrometers

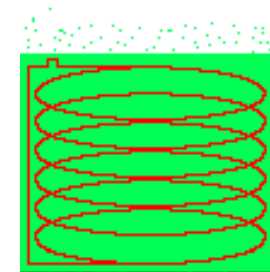


NMR Magnet

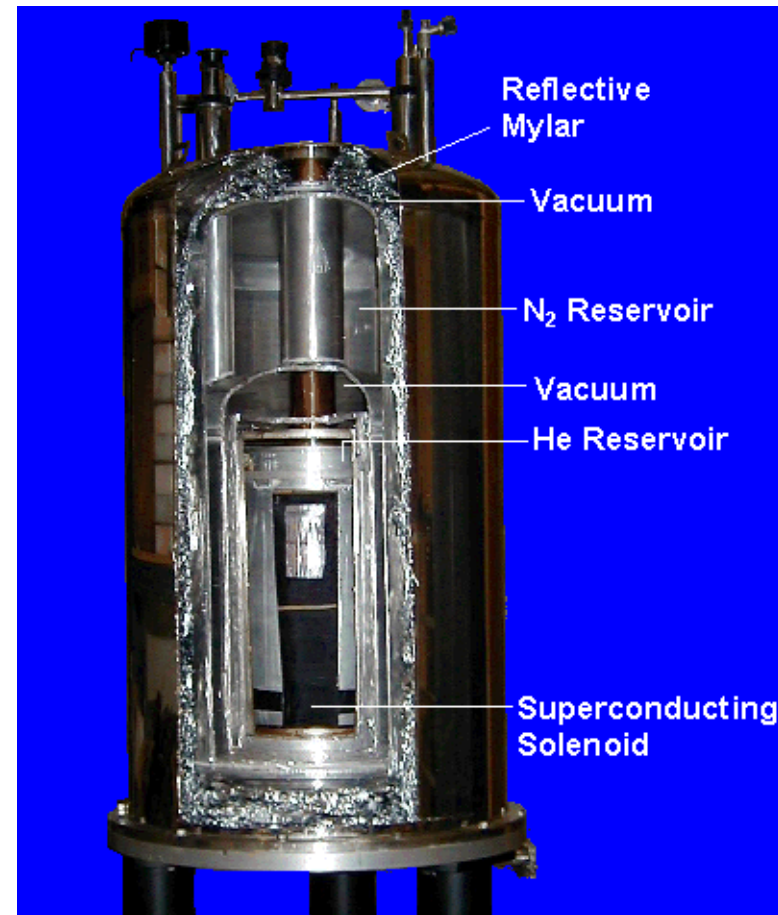
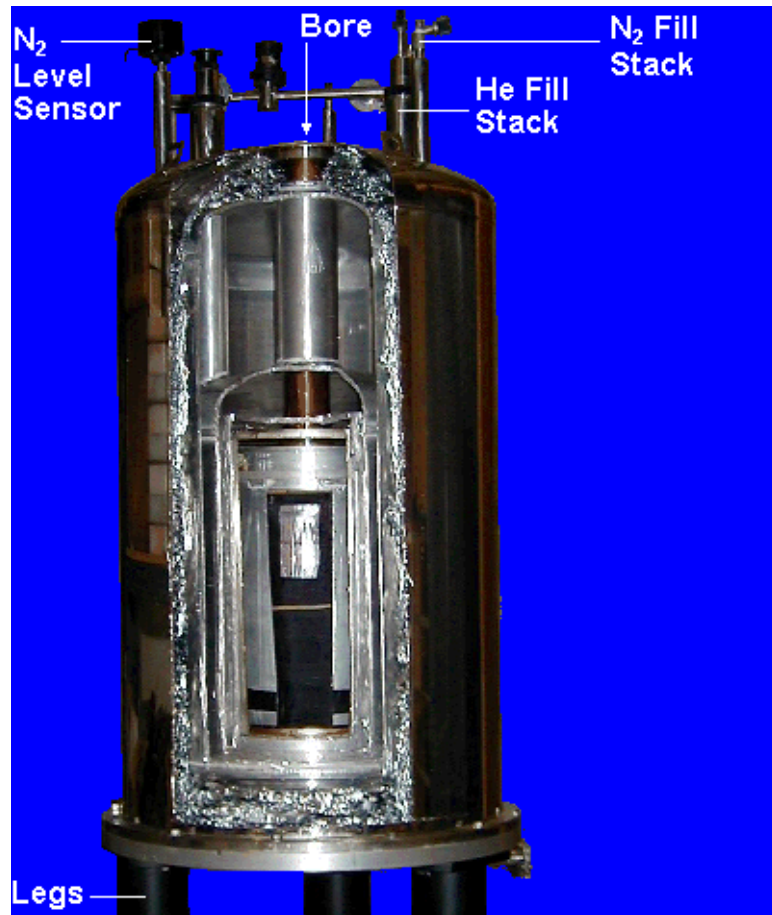


- Vacuum
- Liquid Helium
- Liquid Nitrogen
- Container & Support
- Superconducting Coil

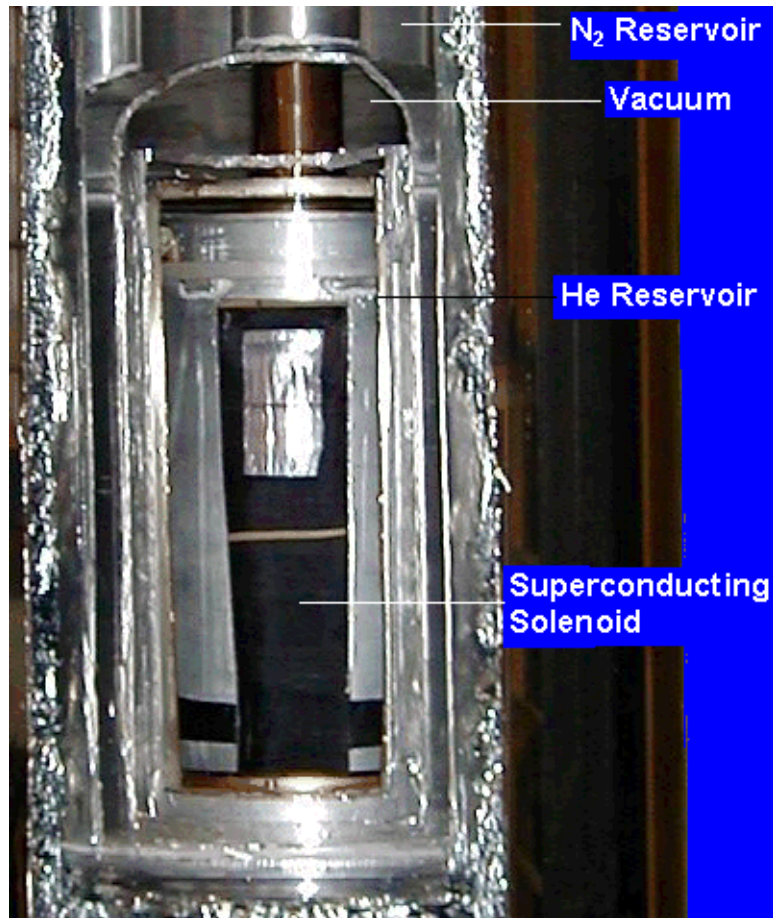
Resistance
(Ω)



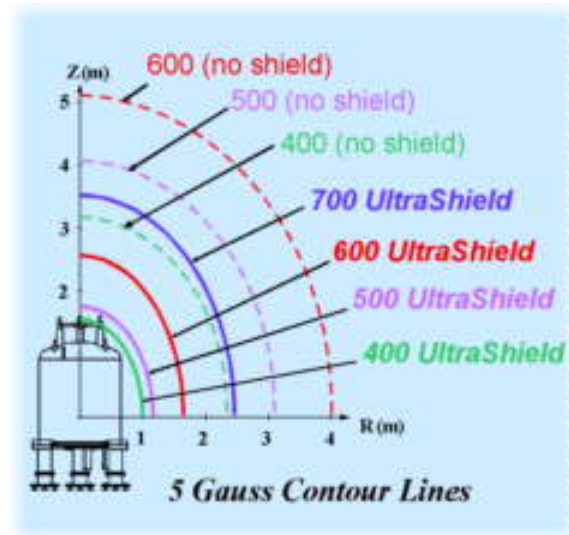
NMR Magnet



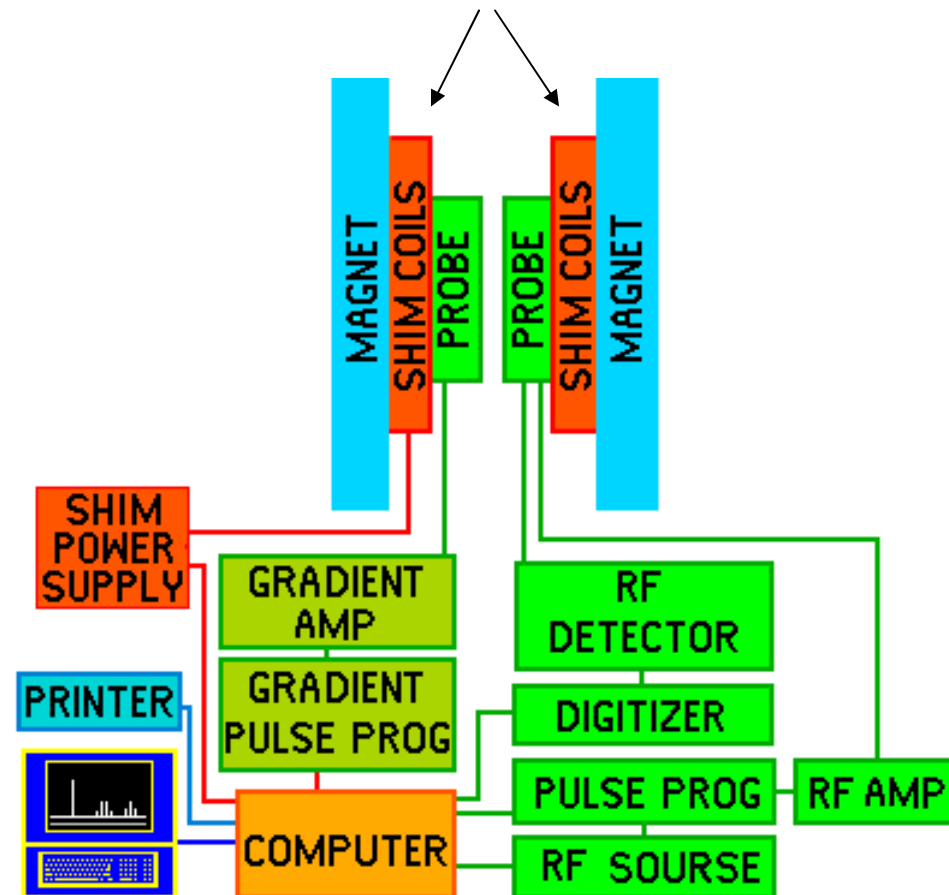
NMR Magnet



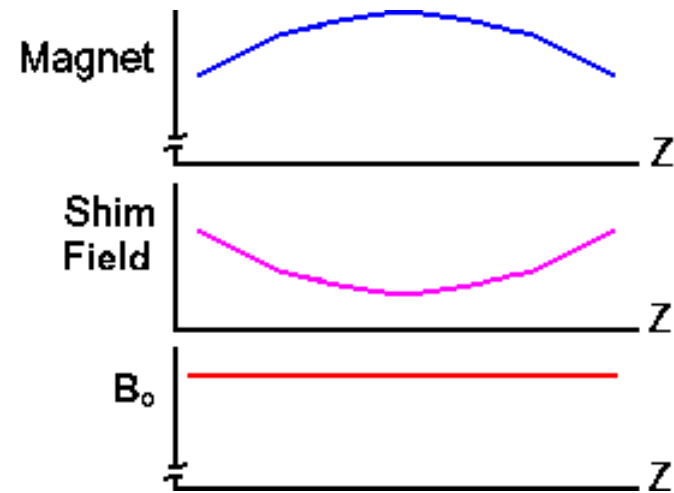
NMR Abschirmung



NMR Aufbau eines Spektrometers



NMR Shimspulen



NMR Shimspulen

inova400 ACQUISITION

Disconnect LOCK FID LARGE

SPIN: off SHIM: manual
on auto

0 20 40 60 80 100 coarse
0 2 4 6 8 0 2 4 6 8 fine

starting lock level = 80.5
current lock level = 78.5

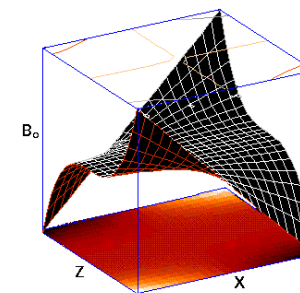
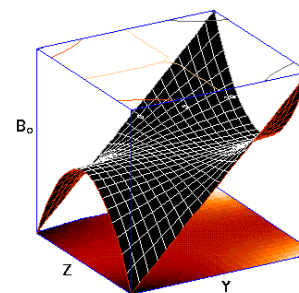
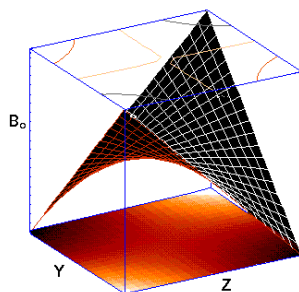
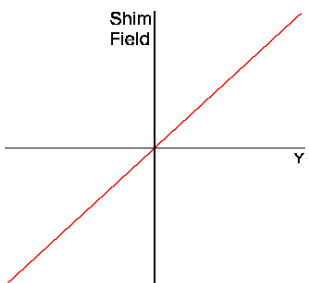
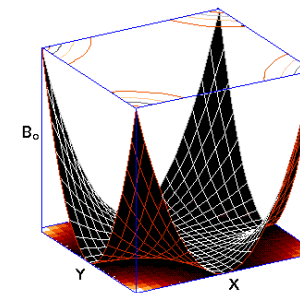
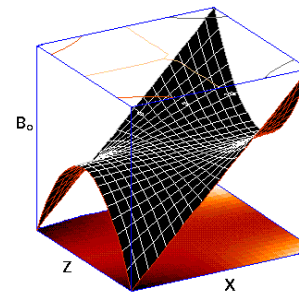
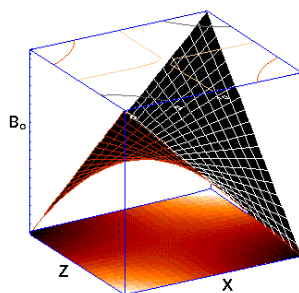
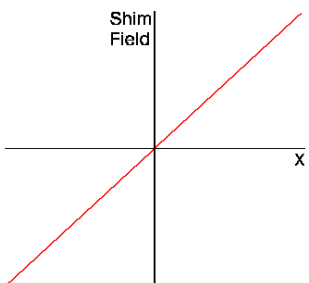
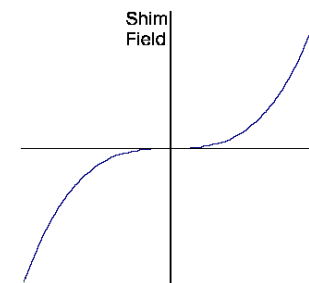
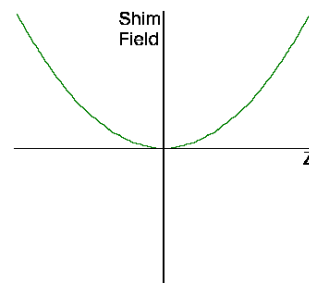
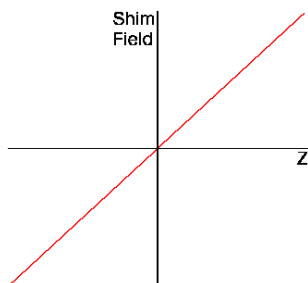
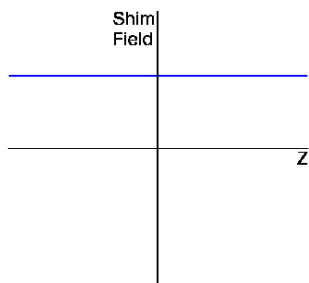
LOCKED SPIN: 20 VT: OFF

SHIM: fine z x 1 best first

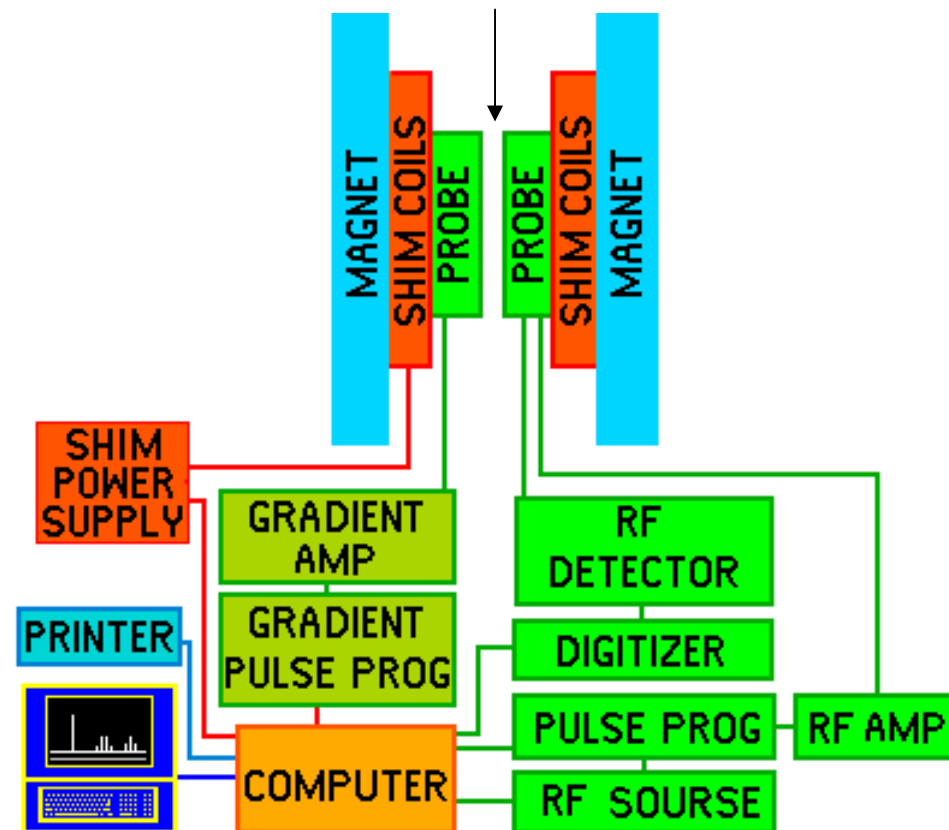
Z1	[-605]	-1+	-4+	-16+	-64+
Z2	[-2031]	-1+	-4+	-16+	-64+
Z3	[-64]	-1+	-4+	-16+	-64+
Z4	[23]	-1+	-4+	-16+	-64+
Z5	[78]	-1+	-4+	-16+	-64+

lock [40] gain -1+ -4+ -16+ -64+

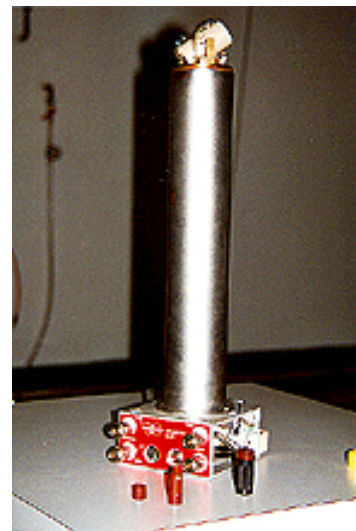
NMR Shimspulen



NMR Aufbau eines Spektrometers

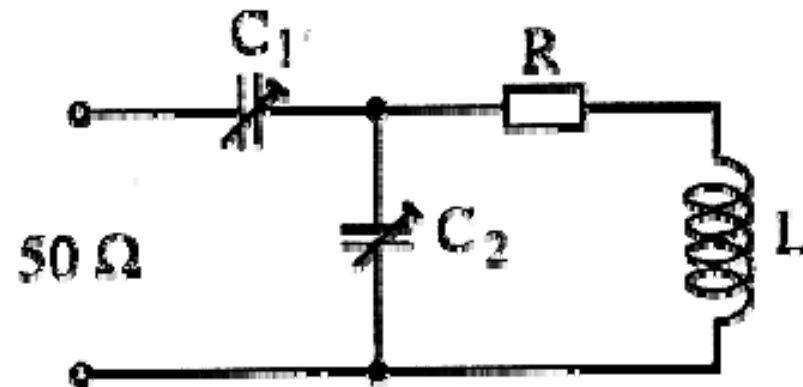


NMR Probenkopf



http://www.jeol.com/nmr/auto_tune.pdf

NMR Spulen



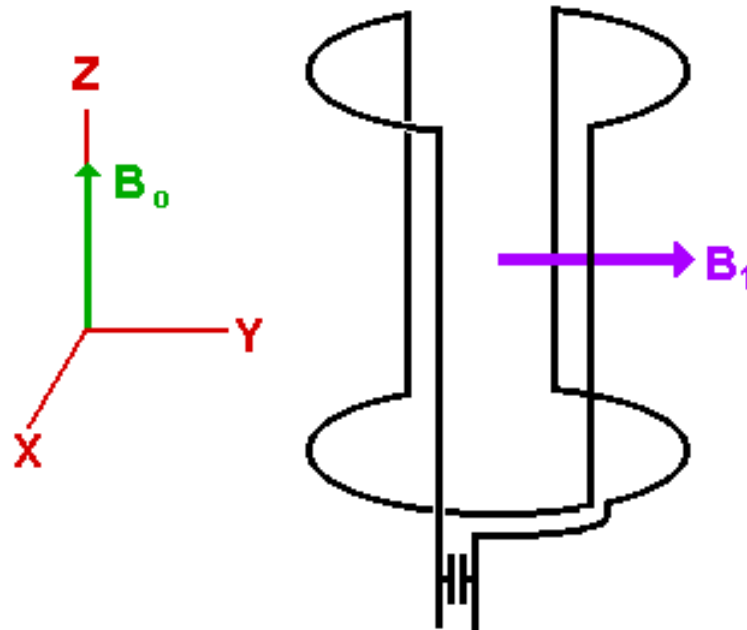
$$U = \frac{Q}{C} + R\dot{Q} + L\ddot{Q} = 0$$

$$Dx + k\dot{x} + m\ddot{x} = 0$$

$$v = \frac{1}{2\pi\sqrt{LC}}$$

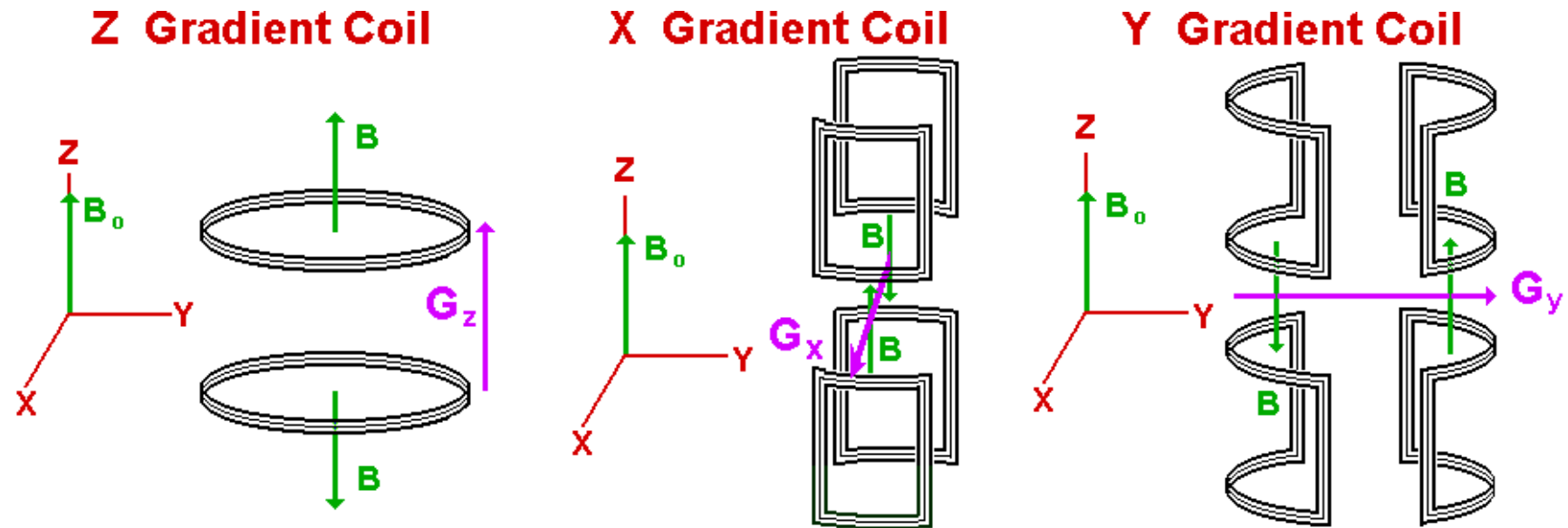
NMR Hochfrequenzspulen

Saddle Coil

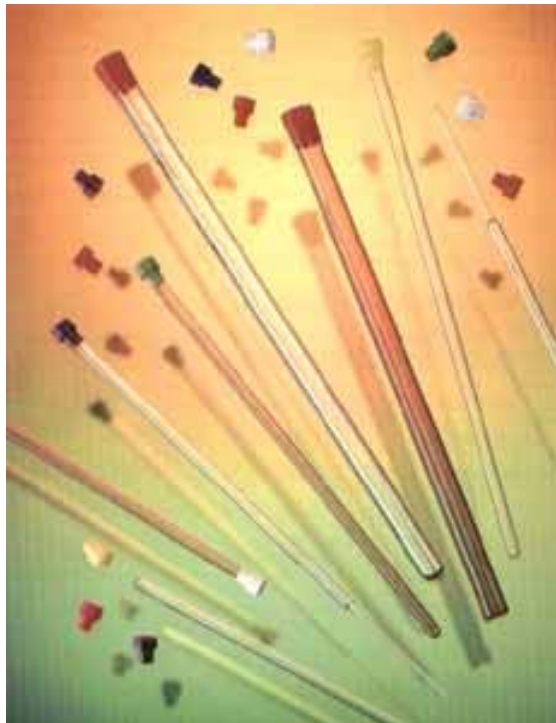


$$\nu = \frac{1}{2\pi\sqrt{LC}}$$

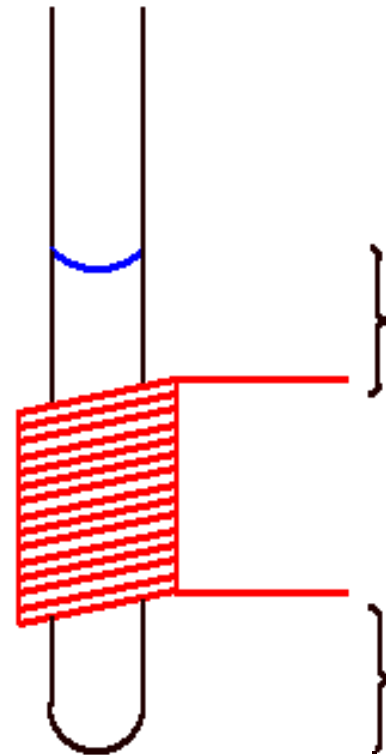
NMR Gradientenspulen



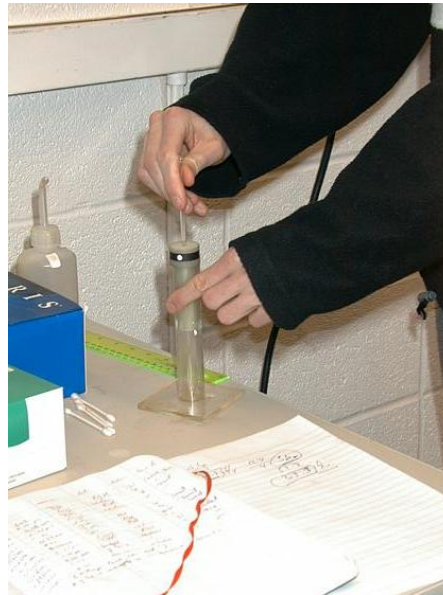
NMR Messprobe



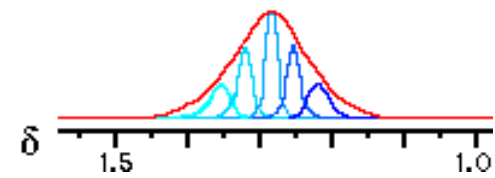
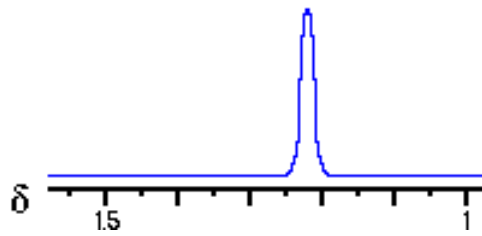
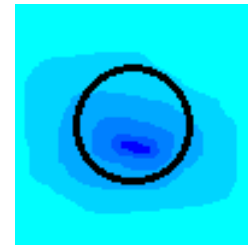
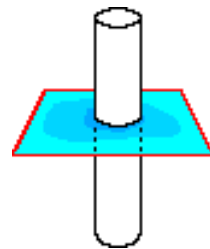
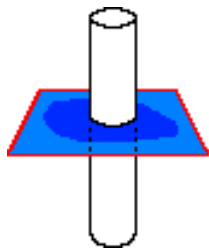
www.rototec-spintec.com



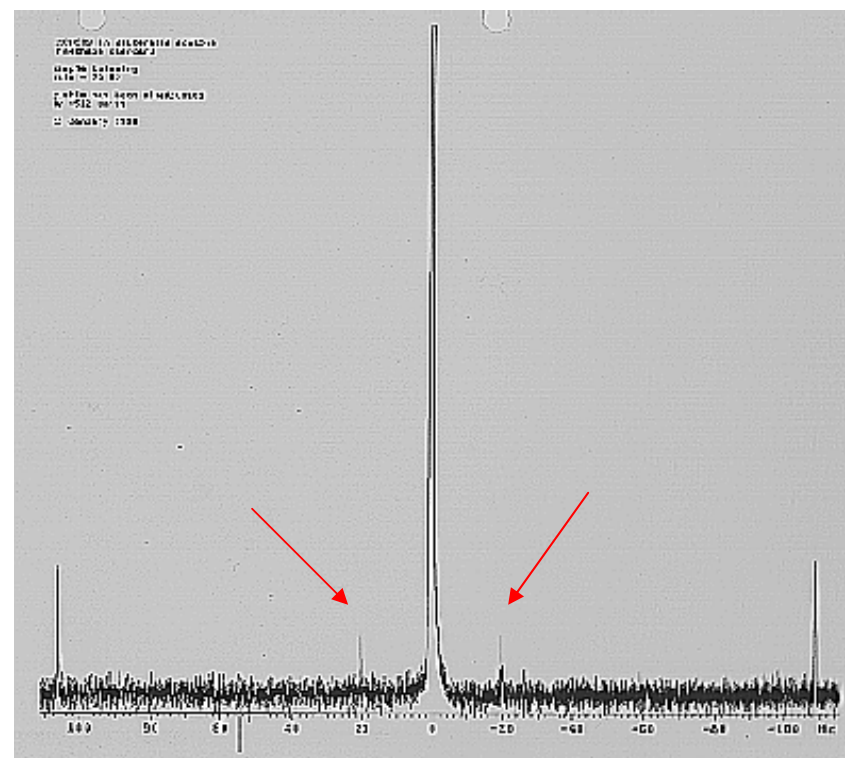
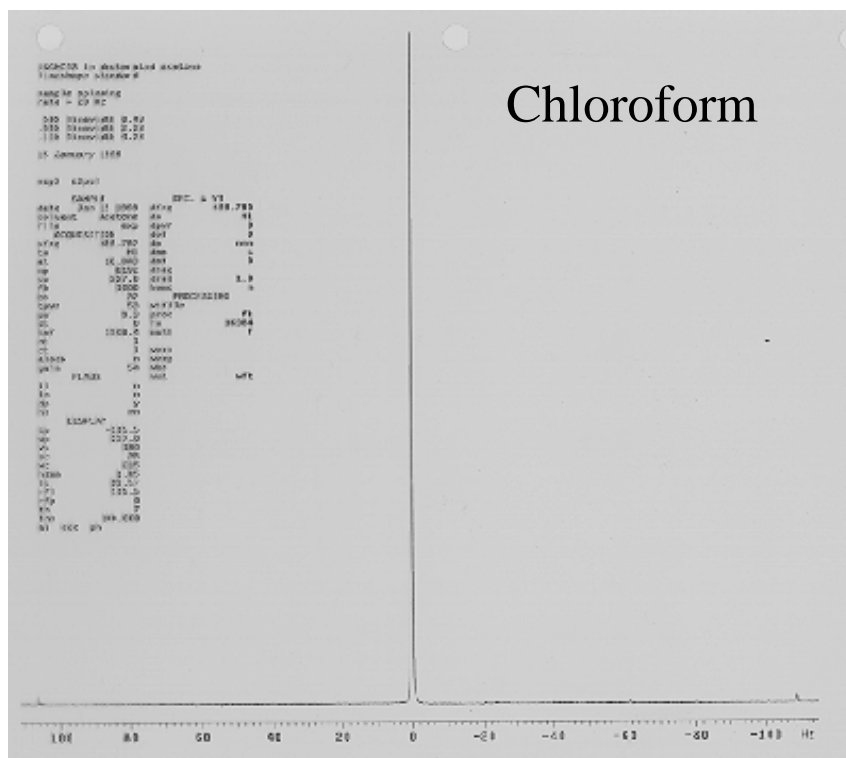
NMR Messprobe



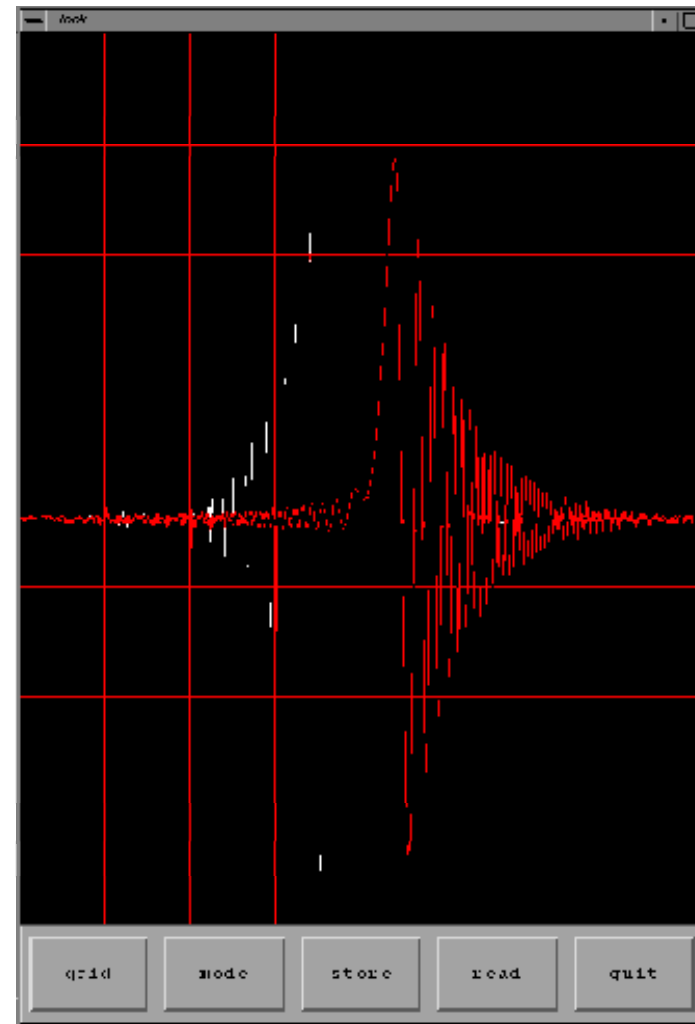
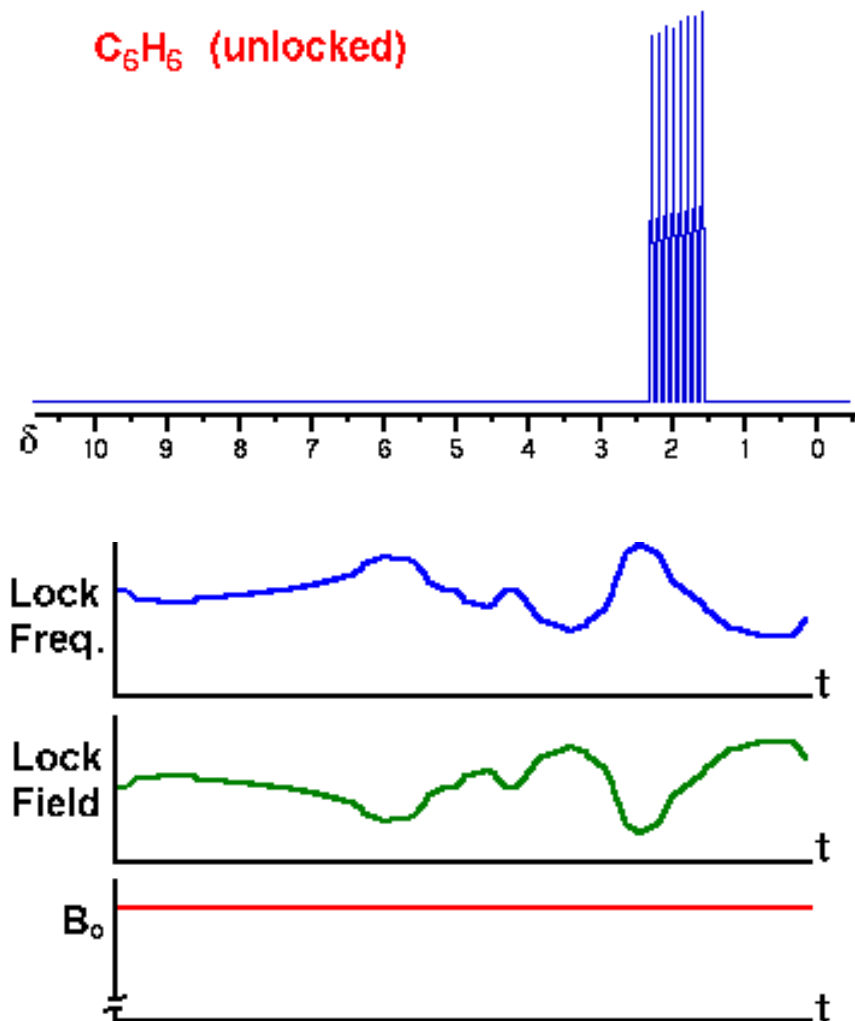
NMR Messprobe



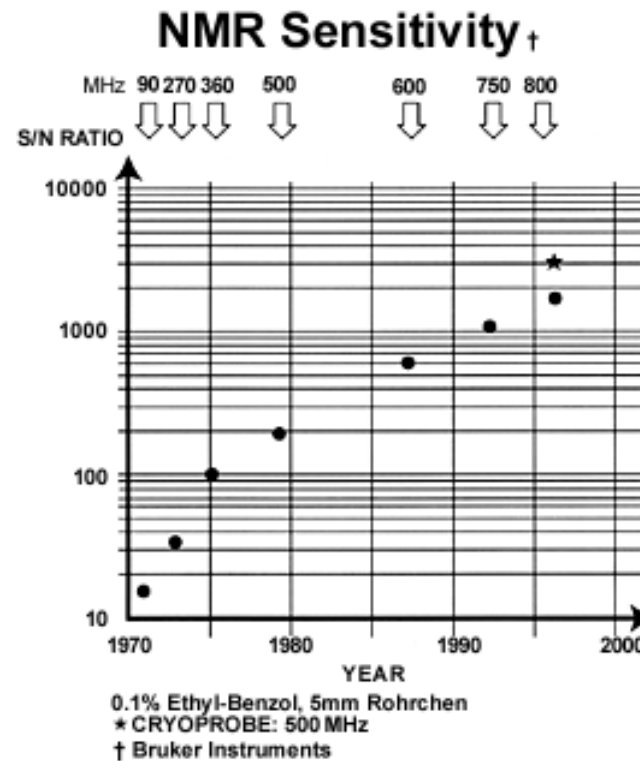
NMR Messprobe



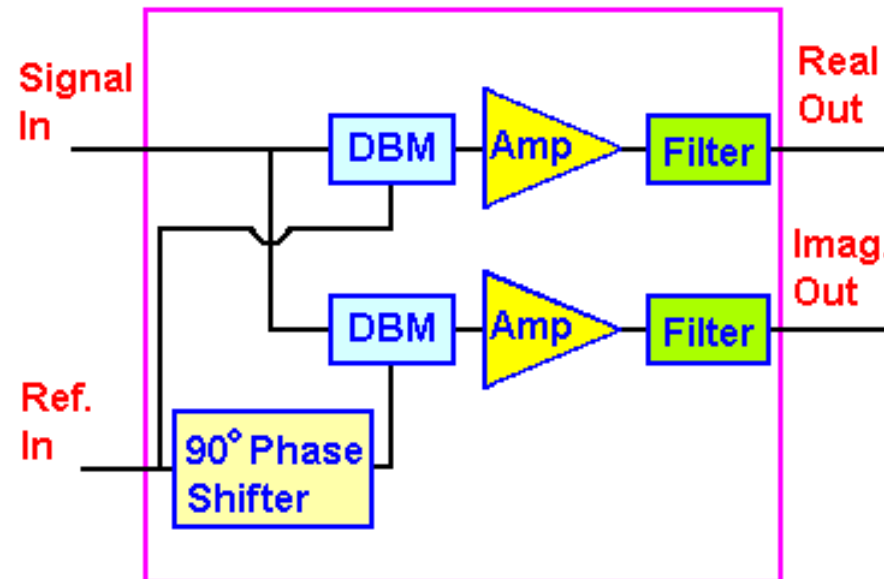
NMR Fieldlock



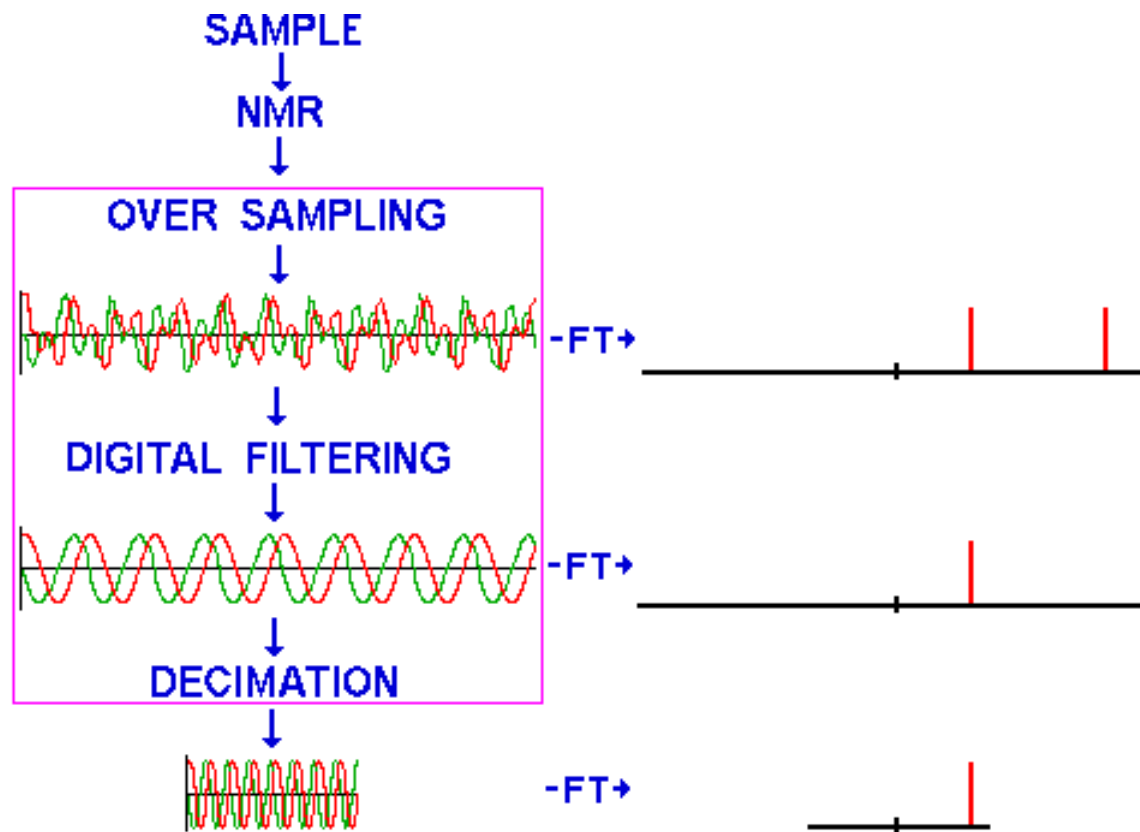
NMR Signal-Rausch-Verhältnis



NMR Quadratdetektor



NMR Digitales Filtern



NMR Digitales Filtern

