

STELAR s.r.l.

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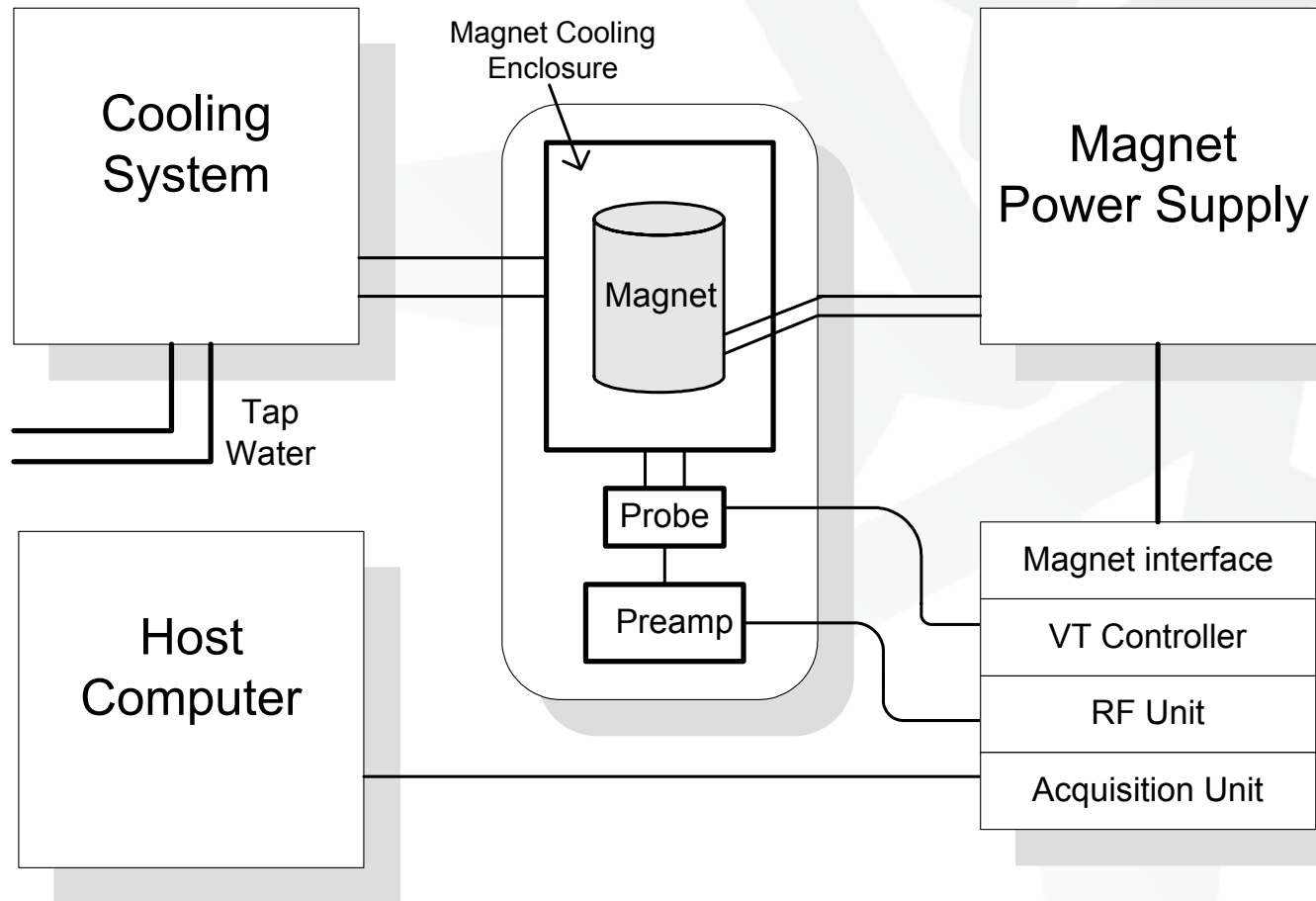
www.stelar.it ***info@stelar.it***

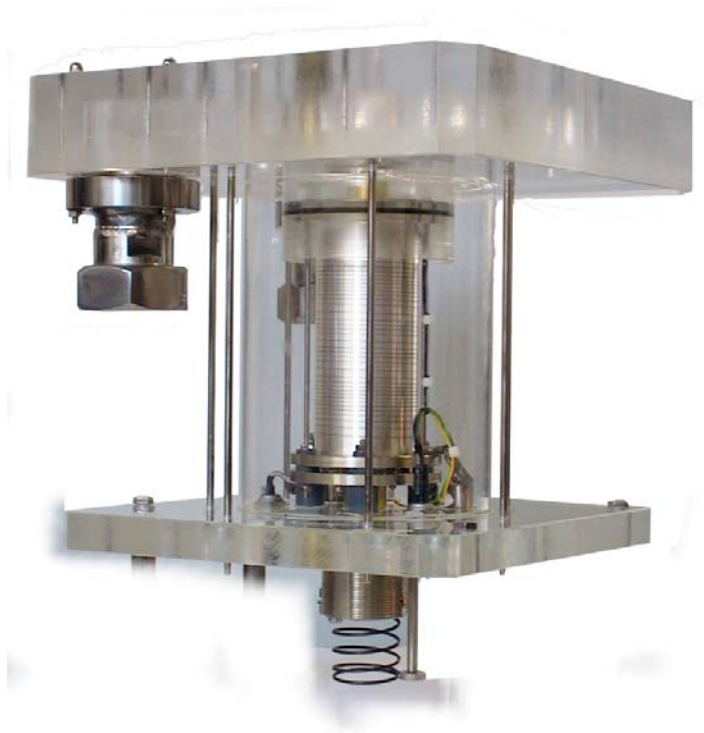
From theory to practice ...

Gianni Ferrante

Stelar







Maximum field: : 1 T (42.6 MHz for 1H) @330 A
Inner bore: 20 mm
Homogeneity : < 150 PPM over 1 cm³



Maximum field: : 0.25T (10 MHz for 1H) @ 130A
Inner bore: 19 mm
Homogeneity : < 150 PPM over 1 cm³

Spinmaster FFC2000 NMR relaxometer



MAGNET

Special design, air coil system
Maximum field: : 1 T
(42.6 MHz for ^1H)
Homogeneity : < 150 PPM over 1 cm^3

POWER SUPPLY

Max Power: 20 KW
Max Current : 440 A
Switch time : < 0.1 ms/MHz
(@10MHz)

COOLING UNIT:

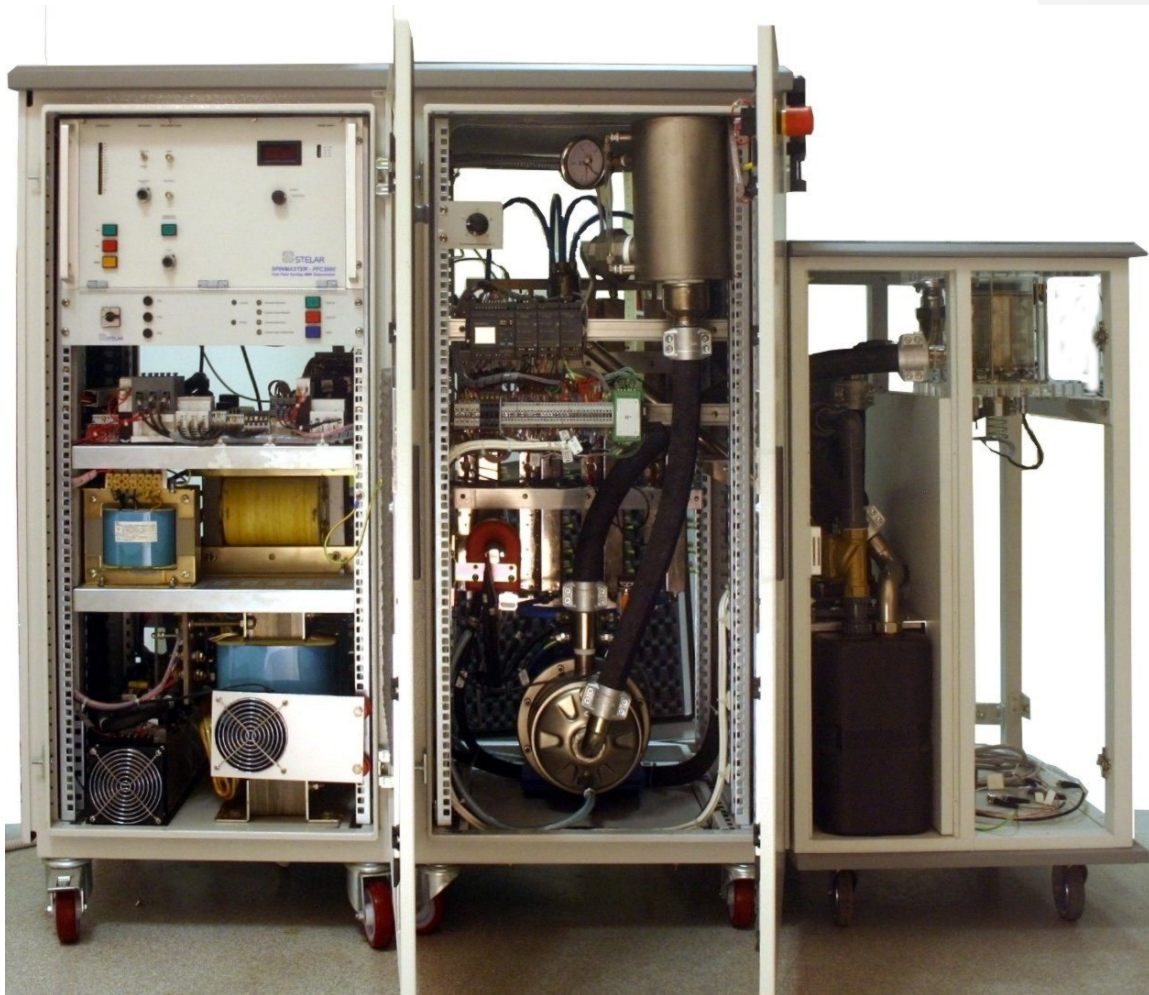
Dual independent, thermally coupled loops. The hermetically closed secondary circuit uses a room temperature cooling fluid. The primary circuit uses tap water with regulated consumption

TEMPERATURE CONTROLLER:

Standard Gas flow system.
Range: -100 to +120 °C Precision
and stability: 0.1 °C

NMR CONSOLE:

RF broad-band from 2 - 80 Mhz.



POWER SUPPLY

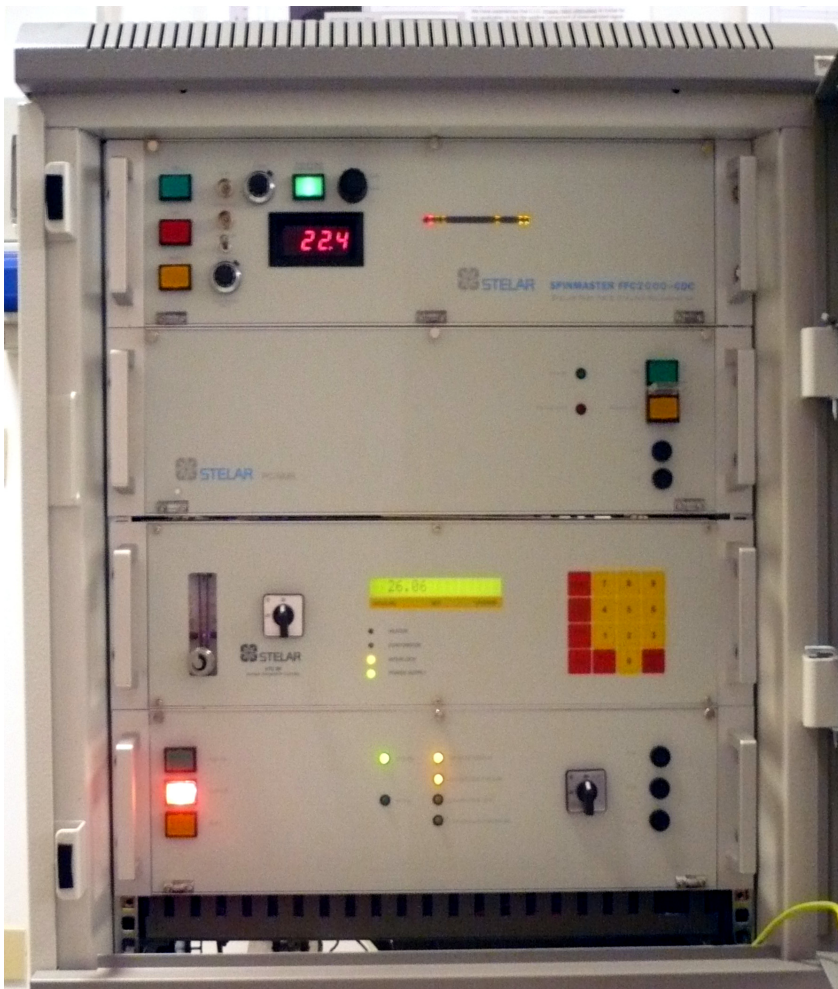
Max Power: 20 KW

Max Current : 440 A

**Switch time : < 0.15 ms/MHz
(@10Mhz)**

COOLING UNIT:

Dual independent, thermally coupled loops. The hermetically closed secondary circuit uses a room temperature cooling fluid. The primary circuit uses tap water with regulated consumption

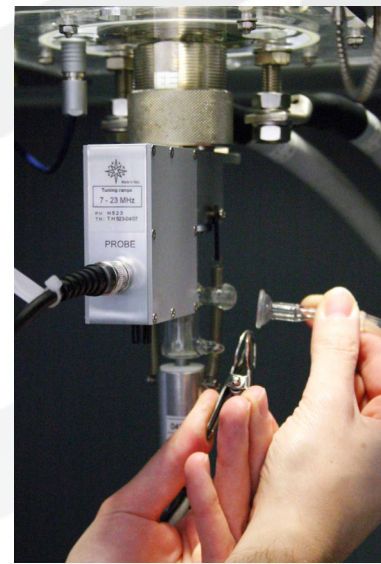
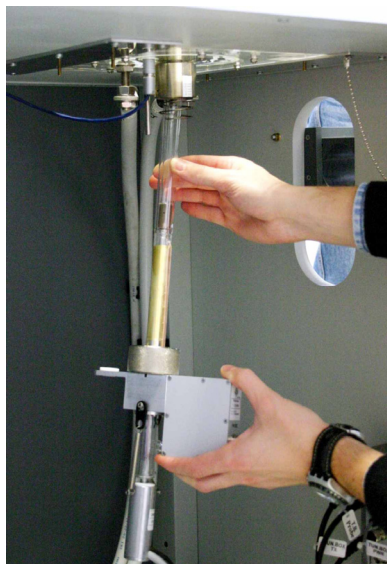
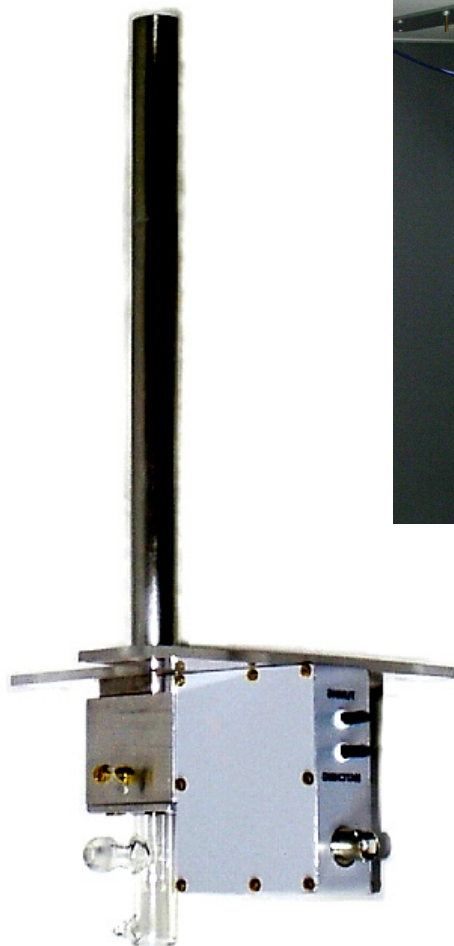


Field Controller

PC-NMR RFs and NMR console

**Sample Variable Temperature
Controller**

Cooling system



Main features

- 10 mm standard NMR tubes
- Broadband tunable in two ranges from 2.5 to 22 MHz
- Glass dewar for Variable temperature from $-120\text{ }^{\circ}\text{C}$ to $140\text{ }^{\circ}\text{C}$

SMARtracer™ is the ideal, cost-effective instrument to exploit in clinical and industrial applications as well as in NMR research the high quantity of information of NMRD profiles acquired by means of the Field Cycling NMR relaxometry techniques.

This information cannot be obtained with any other TD (Time Domain) LR (Low resolution) NMR instrument

Main Features

- Measurement of T1 and T2
- Measurement of NMRD profiles from few Khz to 10 MHz (1H proton Larmor frequency)
- Variable temperature measurement (-120°C +140°C with 0.1°C precision)
- Multinuclear operation





Main Specifications

NMR CONSOLE

Very high performance digital NMR console with direct acquisition of signals up to 90 Mhz, 128 bits/20ns/7 loop levels pulser, 300W linear RF pulse transmitter

SOFTWARE

Windows 98,NT, WIN2000, XP NMR package for system control, acquisition and data evaluation and export

POWER SUPPLY

Max Power of system : 1300 W
230/115VAC 50/60Hz

DIMENSIONS AND WEIGHT

82x52x57cm - 32x21x23 inches - Weight 75 Kg

The magnet and power supply are cooled by means of a commercial chiller (no water needed)

MAGNET

Special design, air coil system

Sample diameter 10mm

Maximum field : 0.25 T (10MHz on 1H)

Homogeneity : < 150 PPM over 1 cm³

TEMPERATURE CONTROLLER

Standard Gas flow system.

Range: -120 to +140 °C Precision and stability: 0.1°C

PC-NMR

(Personal NMR Console) is the Stelar high performance, general purpose, portable NMR console.

Its innovative design provides a single and powerful solution for most NMR and NQR experiment

Main features

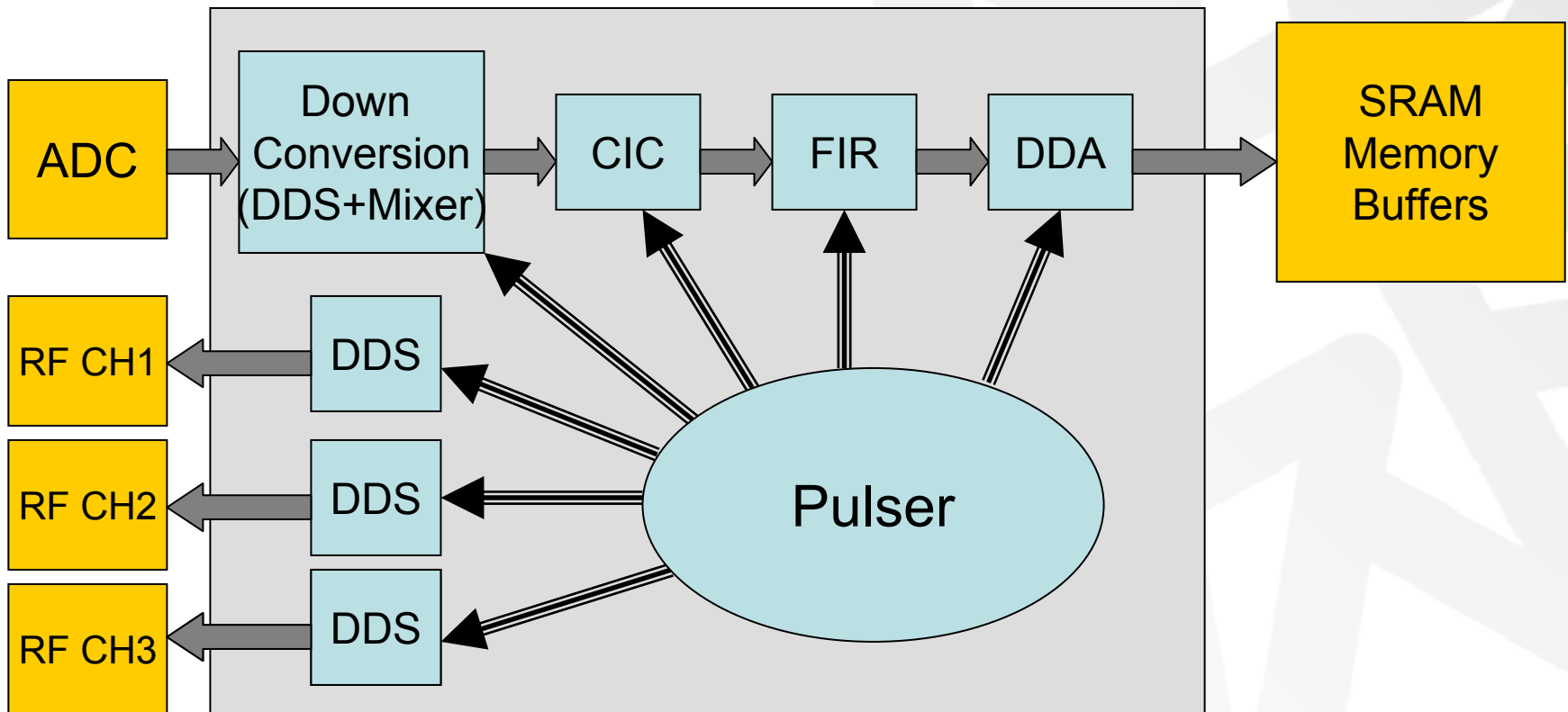
This unique NMR system is housed in a robust aluminium case with IP65 protection.

The console includes computer, monitor, input/output devices, RF power transmitter, RF front-end and preamplifier. Moreover a powerful NMR software package with a large sequence/experiment library is supplied for most NMR and NQR applications as well as mobile NMR

Main Specifications

- n.3 (three) independent RF channels up to 90MHz output direct acquisition up to 90MHz
- wide receiver analog bandwidth for undersampling applications
- 128bit/20ns/7loops levels pulser. The unique timing technology allows the 'on fly' reprogramming, under pulser control, of all devices, including system frequency, digital filters, down converters and decimation coefficients even during the acquisition of the FID.
- Accumulation in 4 separate buffers of real and imaginary parts , phase and absolute value of the signal
- 300 W RF linear power pulse transmitter
- Power supply 230/115, 50/60Hz VAC.





The unique timing technology developed allows the 'on fly' reprogramming, under pulser control, of all devices, including system frequency, digital filters, down converters and decimation coefficients even during the acquisition of the FID





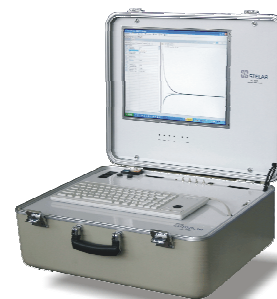
SPINMASTER FFC2000 Compact
high performance 1Tesla system



SMARtracer bench-top 0.25T 10MHz system

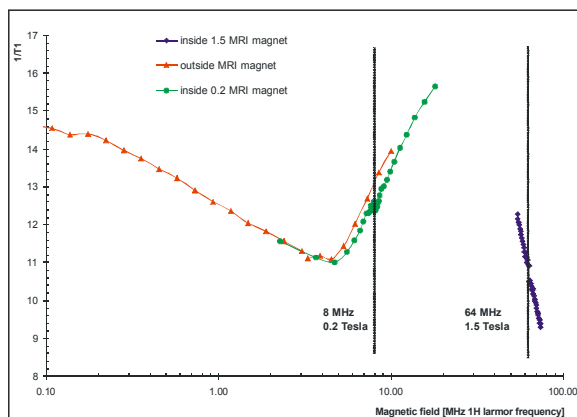
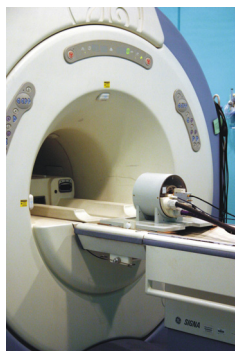


PC-NMR General purpose Personal NMR console



MRIn

a concept and a simple MR instrumentation capable to obtain a NMRD profile in a field range of 0.5T (-0.25T + 0.25 T) centered around the magnetic field strength of any clinical MRI scanner.

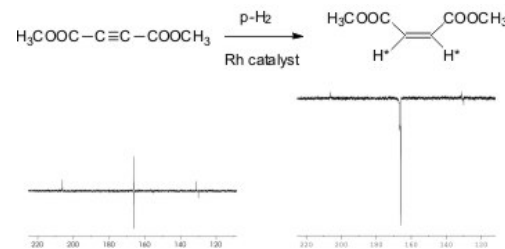


Hyperpol

Para-hydrogen_P3 equipment.

A procedure to transfer the spin-order of para-hydrogen to nearly ^{13}C resonances.

see: www.invento-lab.com



New NMR Software Package...

(coming soon!)

Rain

The next release of software for NMR acquisitions, RAIN will substitute the actual version AcqNMR.

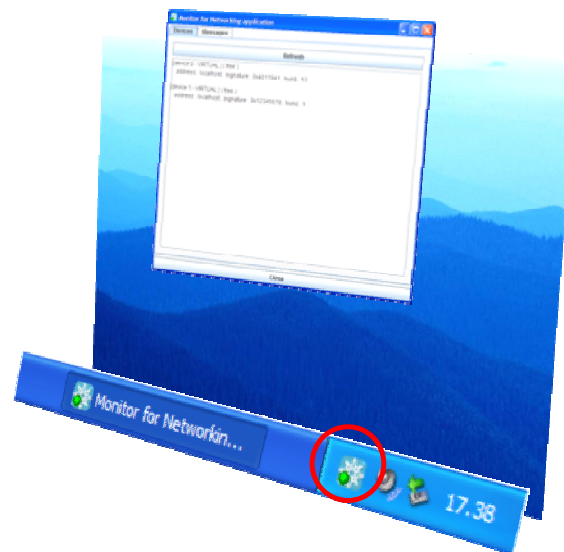
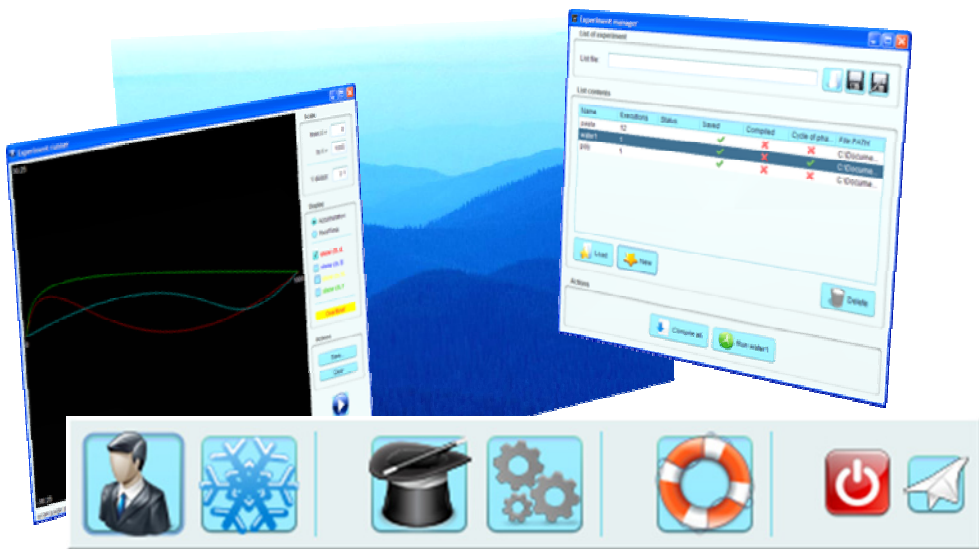
Its characteristics includes

- Better managing of experiments
- More customizable and intuitive interface
- Compatible with future hardware peripherals
- Java based, suitable for Linux, MAC and Windows

Rainbow

Our software will be able to reach peripherals over the LAN networks. RAINBOW is the module that can share installed boards to other remote clients in transparent way for the user (but networks delay, of course).

RAINBOW can run separately or in the same session of RAIN.

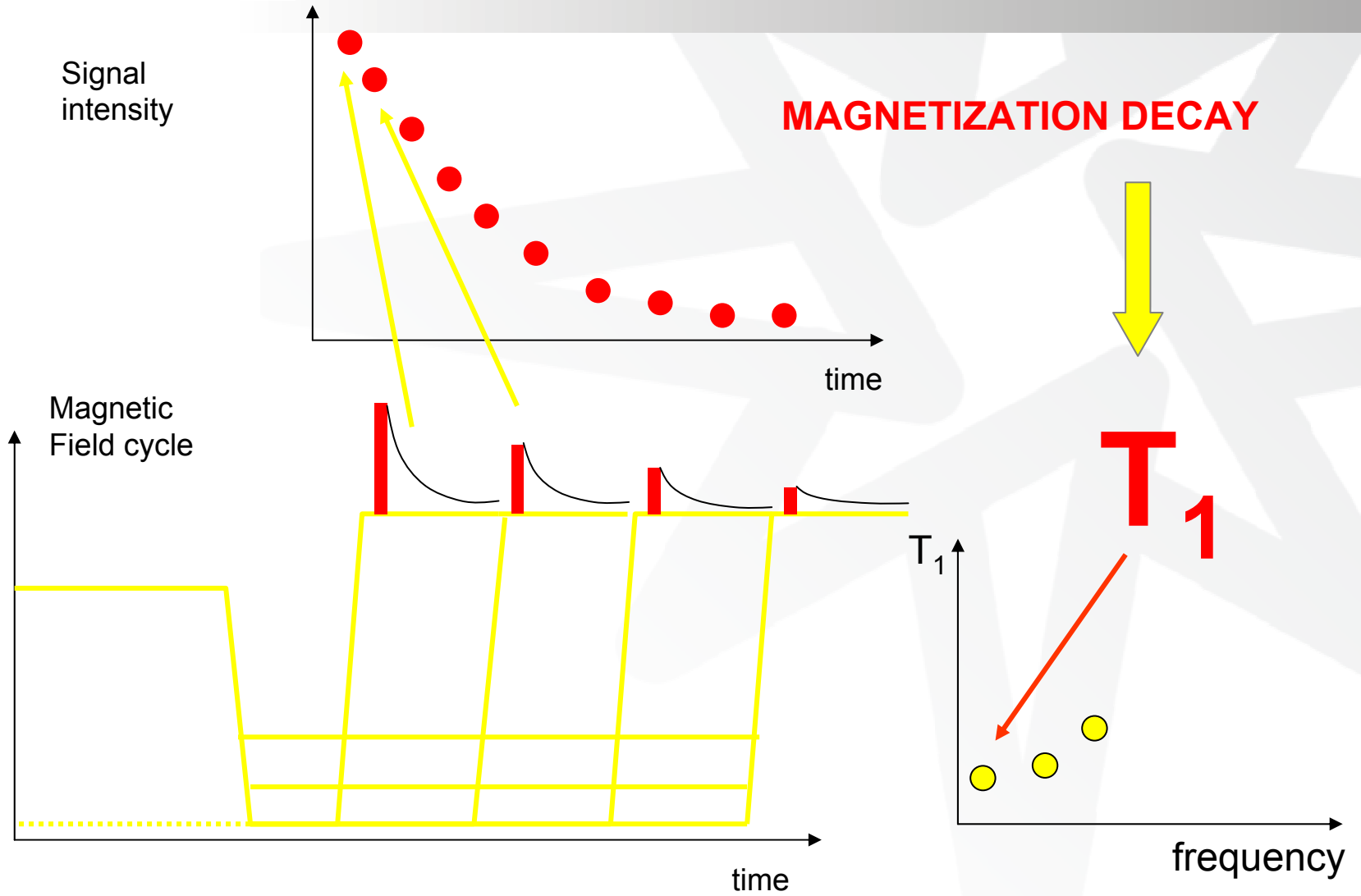


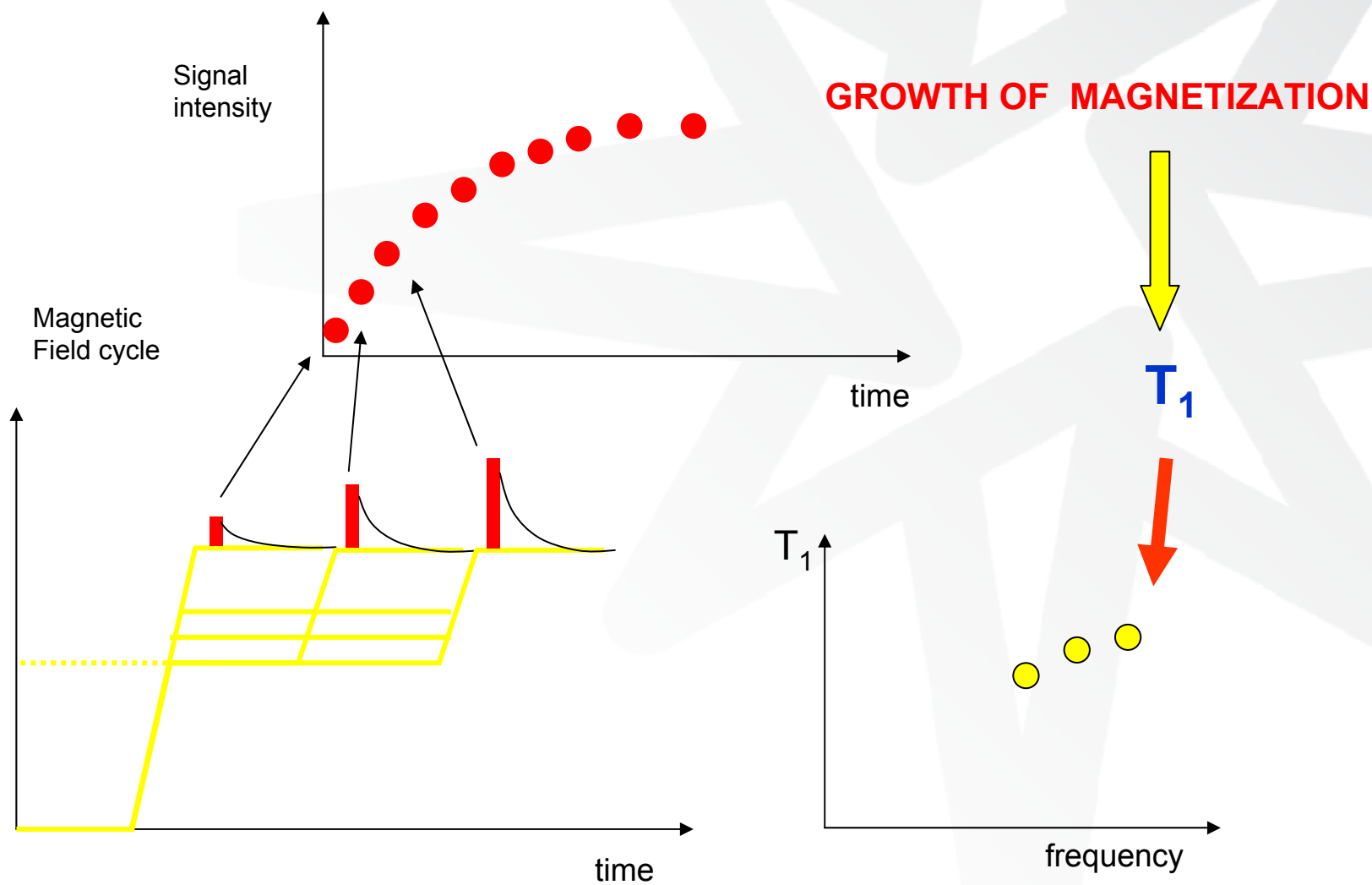
Beta version available only for PC-NMR console

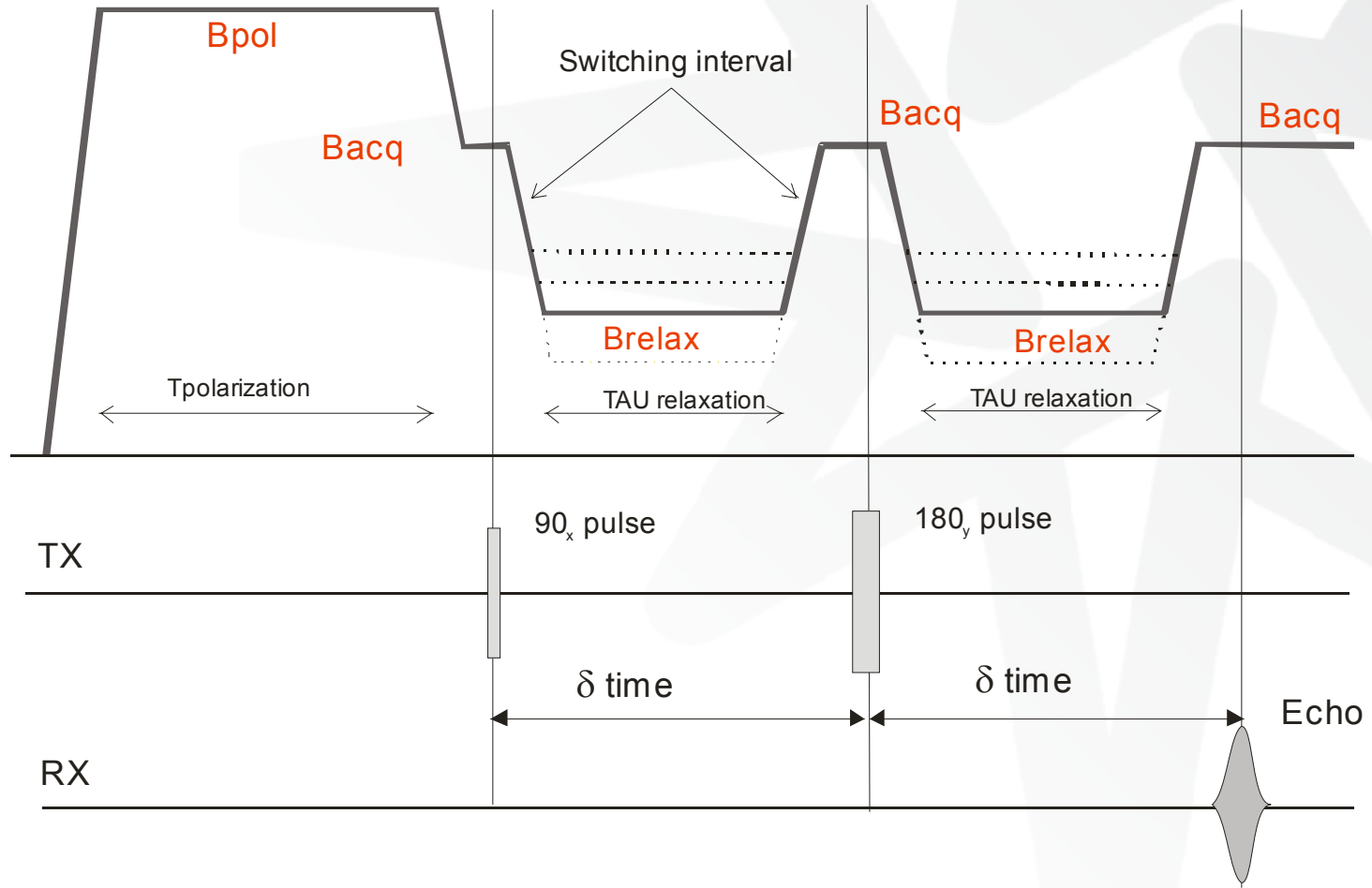
- Main parameters of a Field Cycling NMR Experiment
- The **PP** PrePolarized experiment
 - the main parameters
 - acquisition of an FID,,
 - The switching time
 - The measurement of T1
 - Limit of the PP sequence
- The **NP** (Non Polarized) experiment
 - the main parameters
 - acquisition of an FID,,
 - The switching time
 - The measurement of T1
 - Limit of the NP sequence

T2 Field Cycling !! ?? Some experiment and data

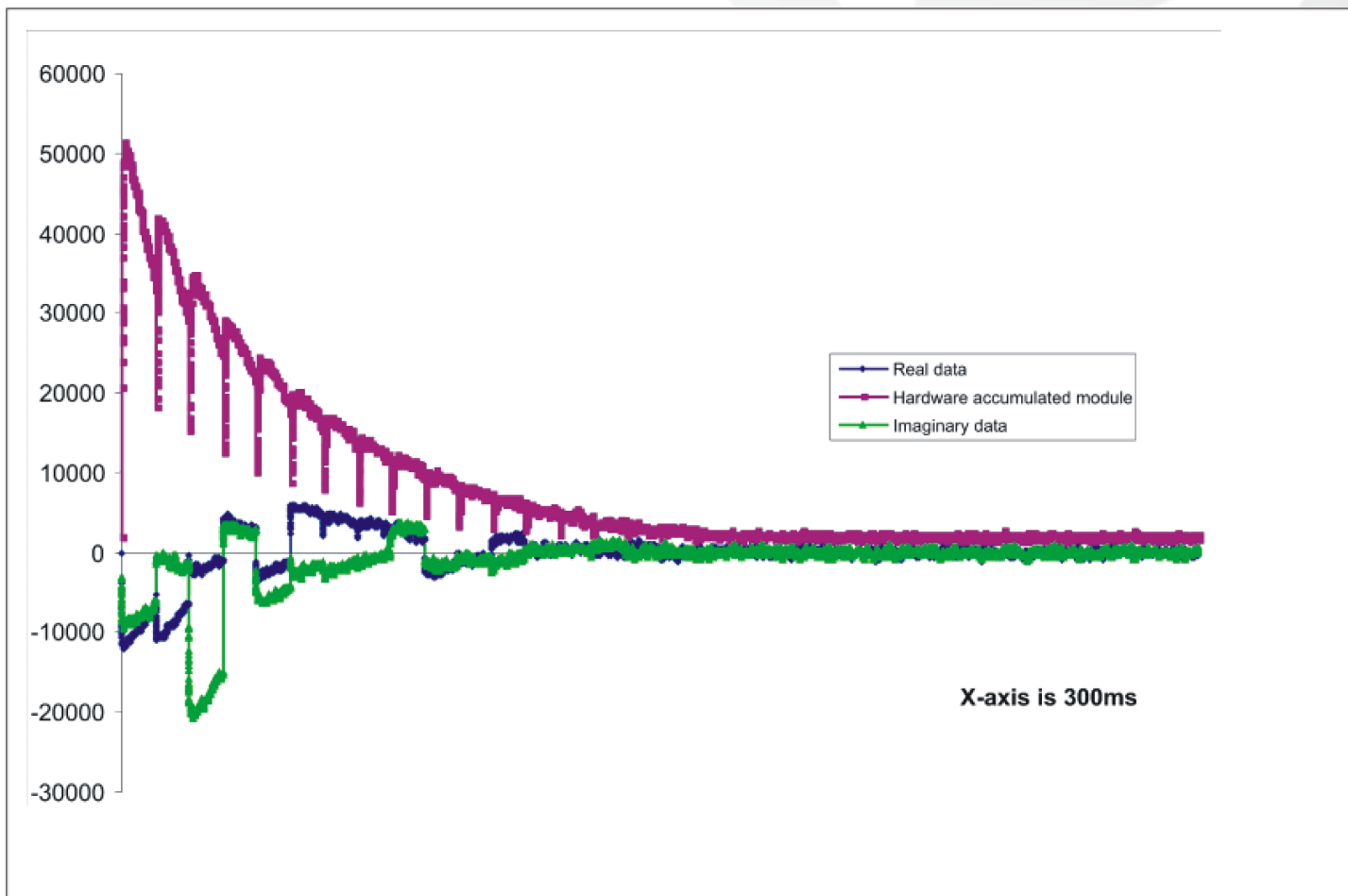
...the basic prepolarized experiments

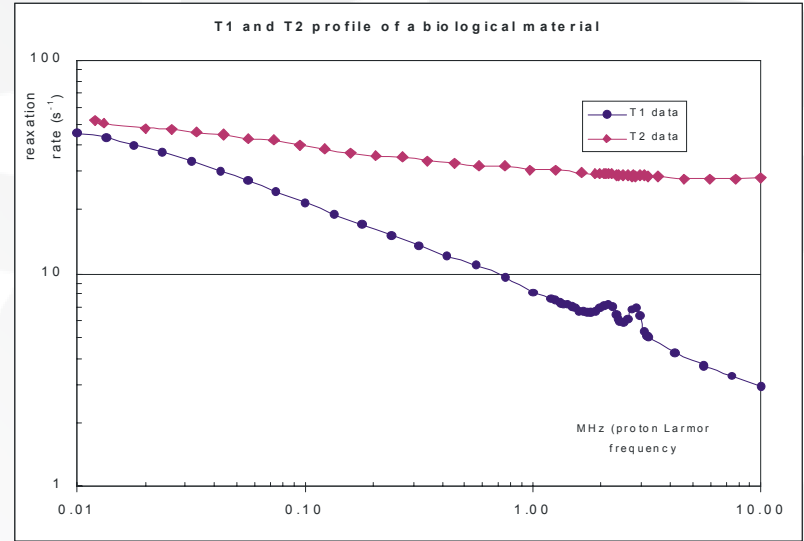
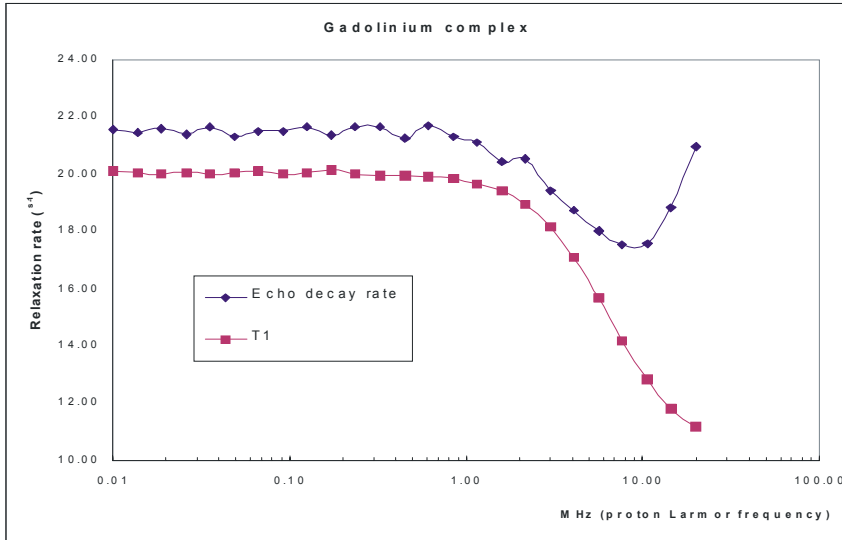






Echo decay with a Prepolarized FC Spin Echo.





R1 ($1/T1$) and R2 ($1/T2$) relaxation profiles on a liquid sample (Gadolinium complex) and a solid sample (raw meat)

CONCLUSIONS...

Moving

From theory to Practice

always presents challenges

